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LIVESTOCK FEED PROCUREMENT

DISCUSSION OF LOW FEED QUALITY PROBLEMS IN PERM OBLAST

Moscow SEL'SKAYA ZHIZN' in Russian 29 Aug 82 p 1

[Article by O. Akulova, special correspondent for SEL'SKAYA ZHIZN', under the rubric "For Each Farm a Dependable Feed Supply": "When There Is No Control: Why Farms in Perm Oblast Produce Poor Quality Feed"]

[Text] Last year specialists from the Perm Oblast agricultural administration carried out a detailed analysis of the quality of feed. It turns out that much of what is considered hay, haylage and silage is in fact useless feed. Only 48 percent of the hay, 36 percent of the silage, 16 percent of the haylage, and 21 percent of the grass meal can be classified as grade no. 1 or no. 2. Only the volume indicated by the above percentages can be accepted; the rest is useless. 246 farms in the oblast received more than half of the low grade hay, more than 200 kolkhozes and sovkhozes half of the low grade silage, and 37 farms half of the supply of enriched meal. In Nytvenskiy, Yus'vinskiy, Usol'skiy, Chastinskiy and other rayons the haylage turned out to be completley worthless.

The specialists not only analyzed the reasons for the low quality feeds but also gave recommendations for quality improvement. One could have hoped for changes. But now that this year's feed production is coming to an end, the results are so depressing.

"Many farms and even entire rayons have still not begun a quality control program for feeds." These are the words of a specialist at the oblast agro-chemical station, L.S. Markova. She goes on to say that, "What has been inspected is nothing to brag about. Only the hay is better than it was last year."

Together with L.S. Markova we went to the Khokhlovskiy sovkhoz in Permskiy rayon. By the beginning of August the farm had stored up almost two-thirds of the planned amount of feed. And not one gram of it had been inspected.

"We're not worried about the quality of the feed," said V.V. Sokolov, sovkhoz director. "It's quite clear that it is good."

L.A. Markova persuaded him to send some feed samples with her for analysis. And this is what the analysis showed. Of the samples taken from 380 tons of

hay, only half of it was grade no. 1 or no. 2. 30 tons were complete waste. Of the 145 tons of grass meal, 97 tons were substandard, the rest was grade no. 5.

So hundreds of tons of waste are turned over in the complete absence of any control in this most important area of work. In fact, on the Khokhlovskiy sovkhoz last year forty percent of the hay was substandard, one thousand tons of silage were considered "poor quality", and that which lay in haylage troughs could not be considered haylage. And the same old story is repeating itself. They have surpassed their neighbors in output, but in fact these farms are on starvation rations: they have to feed their livestock not with the products of hard work but rather with what remains in the ricks and troughs.

For sure there are few examples in the oblast of real agricultural concern for the quality of feed. Last year only 30 kolkhozes and sovkhozes received feed that met standards. One of them was the Motovilikhinskiy sovkhoz of Permskiy rayon. Here in its second year of operation is a laboratory for the inspection of feed; it is headed by agronomist Hadezhda Dochiya.

She says that, "We are trying to analyze a sample from each mowing. The grasses that are mowed early in the morning have more carotene. Therefore by using the information from our laboratory, agronomists can organize the feed harvest work so as to eliminate losses and to ensure a high nutritional content for the feed."

For a higher quality feed the farm had to employ the latest methods in feed production. Almost all of the hay here is pressed and dried by an active ventilation process in special barns, and now there are more than 600 tons of this feed in storage. Laboratory statistics indicate that 70 percent of it is grade no. 1, 20 percent more than last year. The rest of it is grade no. 2. There is none that falls below minimum grade standards.

S.G. Pirogov, director of the sovkhoz, claims that, "Last year's experience convinced us of the necessity of a very careful control. The farm's supply of feed was barely half of what we needed, this because of the extremely unfavorable summer growing season. But our cattle raisers had no losses over the entire winter: the size of the herd was not reduced nor was productivity lowered. Milkers with our pedigree cattle received more than 4,000 kg of milk per cow. And this is because we were able to produce high grade fodder."

Just about all of the rayons in the oblast have the possibility of incorporating high technology. One can use technical equipment, scientific advice, and of course the best, the experience of well-run farms. Last year in the oblast, however, only 12.5 percent of coarse feeds were pressed, only 0.2 percent of hay was dried by the active ventilation process, and only one-fifth of the feed was delivered to farms. Additions to this amount will be small this year.

The tendency of farms to do things as they have been done, to change nothing in the constantly developing system--this is holding up the introduction of the latest technology. Inertia is the most formidable barrier.

"But there are more objective reasons", claims P.I. Kustov, head of the Permskiy rayon agricultural administration. "How can you compress hay if there is no binder twine?"

This complaint is met with in many other rayons. But if one thinks about it, what did happen to the binder twine? The oblast received ample supplies of it. Well it was used to bale hundreds of tons of straw which was brought in during the winter from Chelyabinsk ., Tyumen and other oblasts. And it was transported by farms of Permskiy rayon because 57 percent of the hay produced here was of poor quality.

Quality losses occur from the very first day of mowing. And each and every year the same mistake is repeated: farms delay the beginning of hay-making and so lose the most favorable time. The Chapayev kolkhoz of Osinskiy rayon for example was late in starting work on the green harvest by almost three weeks. Neighboring farms spent much effort in mowing the grasses, while here they bided their time. It wasn't necessary to have an analysis performed to see what kind of hay would be produced from the coarse stalks that had been left standing for too long a time. The Dzerzhinskiy and Pobeda kolkhozes and the Sadkinskiy sovkhoz of Il'yinskiy rayon began the hay mowing late, did not stack the hay properly, and did not even cover the ricks. Last year hay on these farms was substandard; this year it won't be any better.

Neither moral nor material incentives for farm equipment workers have aided in the production of high quality feeds. Although all farms have worked out a system of competition and bonus payments for high quality production, all of this is just on paper. If there is no quality control program, how can there be competition to increase quality? On most farms, equipment operators receive pay for hay production; it is only at the end of the year that there is a recomputation of salary.

Equipment operators of the Ocherskiy sovkhoz complain: "You go ahead and figure out what we're getting paid for. During the summer they don't say anything about the quality of feed. If we knew that we're not doing the work correctly, then we'd try to do it better."

No quality control for grass meal is responsible for huge losses of this valuable and necessary feed which demands much energy. Last year in Kosinskiy rayon all of the meal was substandard; the meal was more than 80 percent waste in Sivinskiy, Yelovskiy, Bol'shesosnovskiy and Suksunskiy rayons. And there is still substandard meal. This is not surprising, for more than half of the automated drying units aren't equipped with thermometers. And the operator, with all his skill and experience, still cannot give the unit the necessary temperature control visually. Because of this, hundreds of tons of green mass are scorched in the ovens. Low quality is also explained by the fact that many farms rework discarded raw materials such as weeds and leaf tops from root vegetables, and also because they keep the grass near the unit for days, although proper use of the unit specifies no more than 30 minutes.

Specialists at the oblast's agro-chemical station have been working now for three years to change attitudes in the express laboratories on farms; they are training laboratory workers, conduct seminars, and supply the necessary chemical reagents and equipment. Latest figures indicate that there are 132 laboratories in the oblast, actually very few, about three-four per rayon. And of these only about one-half are in operation. On most farms there is no one in charge of quality control for raw products, and moisture of haylage and silage stored in troughs is not checked.

The director of the Ocherskaya plant and animal laboratory, A. Ya. Makarovskaya, told me that, "There is not one operating express laboratory in our rayon. Out of 4,173 tons of hay stored by the farms, we graded only 156 tons. Only two sovkhozes sent samples."

As the laboratories haven't been set up, there is a quality control center for feeds run by the head of the agricultural administration of the Ocherskiy rayispolkom, R.A. Ovchinnikov. It is true that few are even aware of the existence of this center, as no one on any farm has seen representatives from this authorized body.

Most farms in the oblast send in feed for analysis only very late in the fall. What good is it then when most of the production is already finished? And at that date who is going to suggest how much hay it will be necessary to haul in from somewhere else in order to feed the animals until the following spring? And there you have it.

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REGIONAL DEVELOPMENT

INTERFARM COOPERATION IN WEST SIBERIAN LIVESTOCK ENTERPRISES

Omsk ZEMLYA SIBIRSKAYA, DAL'NEVOSTOCHNAYA in Russian No 7, Jul 82 pp 12-14

[Article by Head, Department of Economics, Organization, and Management of Agricultural Production, Omsk Veterinary Institute; Docent, and Candidate of Economic Sciences A.V. Tkach: "Cooperation In Western Siberia"]

[Text] At present in Western Siberia, certain developmental forms of integrated production have taken shape. The most widespread form of interfarm cooperation consists of sovkhozes and kolkhozes fulfilling the functions of interfarm enterprises in the raising and fattening of young livestock, specialized feeding of heifers, and the production of feed and other agricultural produce. In 1981, the region had 258 sovkhozes and kolkhozes functioning as interfarm enterprises, including 142 engaged in raising and fattening of young livestock, 101 in heifer raising, and 15 in swine production.

Their association with participant-farms is regulated by contract and existing regulations. Management is accomplished by a Council of representatives from the cooperative partners. Profit derived from these enterprises is distributed partially via intrasector accounting prices, with remaining profit being distributed at the end of the year. The production base of the farms functioning as interfarm enterprises is established both by use of their own assets as well as share payments from participant-farms and through credits of Gosbank.

In 1981 also, 31 production associations were functioning, including 13 intrarayon sector with closed production cycle, 2 vegetable-dairy, 1 sheep-raising, and inter-rayon sector with closed production cycle--4, 3 of which were engaged in raising and fattening of young livestock and 1 in swine production; oblast (kрай) with open production cycle--11, 5 of which were involved in raising and fattening of young livestock, 3 in the production of grain crop seed and grasses, and 2 in swine production. Agroindustrial associations spread in fruit and vegetable production and are carrying on functions of production, processing, storage, and sale of vegetable produce. Vegetable harvest yields in those associations are higher by a factor of 2.5 to 3 and costs lower in comparison with other farms. The principal bulk of vegetables is sold in fresh form, and only 10-15% of production is processed.

A high level of efficiency in vegetable growing operations has been attained by the "Omichka" Production Association in Omsk Oblast. This association consists of four farms with canning shops having an annual capacity of 9 million cans. From 1975

through 1981, production and sale of vegetables to the state here increased by more than a factor of 1.5, and crop yields and labor productivity increased. Profit during these years rose by a factor of 2.3 and reached 6.3 million rubles in 1981. However, not all problems in the vegetable associations have been resolved at the juncture "production-consumer". Uncoordinated operations of sovkhozes and trade organizations and shortages of packaging materials in combination with excessive handling of the vegetables result in mechanical damage and spoilage of mature produce.

In the Yegor'yevsk Rayon of Altay Kray, an interfarm mixed feed plant is functioning, which was built by share payments from seven farms in the rayon. It is subordinate to the rayon agricultural administration, has an independent balance and constitutes a corporation. The mixed feed is processed chiefly from raw materials provided by the participant-farms. The plant has 3 shops functioning--the mixed-feed shop, for the production of full-ration granules and pellets, and of aminoconcentrate supplements. Annual production here is 30.5 thousand tons of mixed feeds, 8.4 thousand tons of aminoconcentrate supplements, and 12.7 thousand tons of full-ration granules and pellets.

The most extensive knowhow in interfarm cooperation in Western Siberia livestock raising has been amassed in the fattening of cattle. In Altay Kray, since 1975, "Altayskotoprom" a kray-level state-kolkhoz association for beef production has been in operation. This association includes 31 sovkhozes and 15 kolkhozes functioning as interfarm enterprises. Using these farms as a base, 3 interrayon and 36 rayon associations are in operation. Young livestock from 530 sovkhozes and sovkhozes in the kray are delivered to them for cooperative fattening operations. In 1980, 272.3 thousand centners of livestock meat were raised on the cooperative basis, which constituted 78.6% of kray production. During the 10th Five-Year Plan, in comparison with the 9th, the "Altayskotoprom" Association increased the average yearly production of weight gain for livestock by a factor of 2.8, labor productivity here increased by 19.5%, and profit grew by a factor of 5.7.

The Biysk Interrayon Association has operated as part of the "Altayskotoprom" since 1975, and includes 59 sovkhozes and kolkhozes of the Gorno-Altay Autonomous Oblast and 35 farms from the foothill rayons of the kray. The chief differentiating characteristic of this formation is the three-step system of beef production with allowance for the natural-economic environments of the cooperating enterprises. Within the the association, a technological, staged interfarm specialization has been implemented. The first stage in the production chain are the breeding reproduction farms of the Gorno-Altay Autonomous Oblast. The intermediate link of fattening is carried out by the farms of the Sovetskiy rayon, and the final stage is the "Promyshlenny" Sovkhoz of the Biysk Rayon, which is the leading enterprise in the association. An abundance of high alpine pastures and water permits inexpensive weight gain for cattle during summer in the farms of the Gorno-Altay. During the fall, a super-follower young head at 150 kilograms per head is delivered to farms of the Sovetskiy Rayon for raising, and upon attaining an average weight of 350 kg, is sent to the "Promyshlenny" Sovkhoz, where it is sold to the state at a weight of 430-450 kg. The transfer of the super-follower young livestock enabled farms of the Gorno Altay during the 10th Five-Year Plan to increase the breed herd by 12.5%, the sale of beef to the state by 5.5 thousand tons, and to receive a profit of 8 million rubles from the cooperation.

During the course of studying the operation of the Biysk Interrayon Association a number of problems was isolated, problems arising as the result of cooperation and which are of interest for the interfarm formations not only of Western Siberia, but for other rayons as well. The planned transfer of a great number of over-follower young livestock from the reproduction farms was the reason underlying the relegation of a number of branches and brigades to lower groups for payment of managers and specialists in the average element. As the result of a planned movement of young stock during the year to the Sovetskiy Rayon, the use of a portion of the mountain pastures was denied to farms which had previously used them primarily for fattening of animals. It was impossible to use these areas for any other purpose. Failure to achieve the planned average daily increase (800 g) by fattening farms in the Sovetskiy Rayon caused the extension of the maintenance period for cattle here by almost a factor of 2. In this respect, sovkhozes and kolkhozes of the Gornyy Altay were forced to turn over part of cattle having low live weights in the fall to the state, and to retain a portion for wintering. In the spring, farms of the Sovetskiy Rayon are prepared to receive young livestock; however, the Gornyy Altay farmers hold the cattle in their areas to pasture them during the summer period and attain the weight gain, then transfer the cattle to fattening farms only in the fall. With the organization of the association, low salaries resulted for the managers and specialists of the fattening farms, inasmuch as the weight gain achieved is not included in the commodity production of the special farm. Cattle deliveries from the breeding farms have yet to be fully worked out. The Sovetskiy Rayon receives cattle differing in weight, age, and fatness, and the cattle are accepted without any selection process. Representatives of the "Promyshlennyy" Sovkhoz itself do not accept poor young stock for final fattening; they are sorted out or culled. With such an approach, the lead enterprise always has the opportunity to select for itself a fine contingent of head which are fattened and thus to insure attainment of the planned weight gain. The meat processing industry enterprises compensate the farms only for transportation expenses from the "Promyshlennyy" Sovkhoz to the meat processing combine. Prior to the cooperative arrangement, these same expenditures were paid to farms for the delivery of cattle from the farms in Gornyy Altay. Thus, with the creation of the association, expenses for the transportation of cattle along the route Gornyy Altay-Sovetskiy Rayon-"Promyshlennyy" Sovkhoz began affecting the results of the finance-management operations of cooperating sovkhozes and kolkhozes.

In the Biysk Interrayon Association, the plan for the sale of meat to the state is disseminated to the sovkhozes and kolkhozes of the Gorno-Altay Autonomous Oblast. Fattening farms of the Sovetskiy Rayon and the "Promyshlennyy" Sovkhoz have a plan only for the production of weight gain, with cattle provided to the meat processing combine being counted in the purchase plan by Gorno-Altay farms. In this respect, the directive agencies of the Sovetskiy and Biysk Rayons often damage the interests of the fattening farms, as the meat produced by those farms is not counted toward the fulfillment of the rayon plan. A divergence of territorial and departmental interests negatively affects the operations of the fattening farms.

Western Siberia has 13 interrayon meat-dairy production associations, including 7 in Omsk Oblast, 5 in Tomsk Oblast, and 1 in Novosibirsk Oblast. Each includes from 3 to 5 farms from a single administrative rayon. Livestock raising here is developed according to the closed cycle of production within association bounds.

An analysis of the operations of these associations indicates that the results of their production-economic activities in a majority of instances differ little from those of other farms in the rayon, and for certain indicators, actually are inferior.

Under modern conditions, even larger-scale interfarm formations are required. In our view, it is inexpedient to establish several associations in a single administrative rayon for the production of the same produce. On the contrary, at the rayon link or element, it is extremely important to effect a more rational separation of labor among the agricultural enterprises, to achieve such a level of concentration to provide the capacity to organize agricultural production on an industrial base. The multitude of formations within the rayon complicates the coordination of their mutual associations, and results in the establishment of parallel minor services.

Research has established that the transfer of super-follower young livestock from participant-farms to interfarm fattening complexes at 5-6 months of age and older does not enable all reserves and capabilities of the interfarm cooperative system to be utilized. With partial transfer of young cattle livestock, existing material-technical and labor resources in this sector are not freed for other purposes, and are utilized with overall lesser effectiveness. The numbers within the dairy herd on reproduction farms are not increased, and gross production volumes are reduced. Therefore, we consider it expedient to ship the super-follower young livestock to specialized fattening farms at the age of 15-20 days.

In Western Siberia, the functions of interfarm enterprises engaged in raising and feeding young cattle livestock are being fulfilled by a majority of farms in the "Skotoprom" system and part of the kolkhozes and sovkhozes of agricultural administrations. It appears to us that the parallel development of farms having identical functions and differing subordination is unwarranted.

In the region studied, 101 sovkhozes and kolkhozes are in operation, functioning as interfarm enterprises engaged in raising heifers and first-calf cows. These farms annually provide more than 64,000 heifers to dairy sovkhozes and kolkhozes for replenishment of and replacements for the primary herd. This form of cooperation has become most widespread in the Altay Kray. With increased concentration, the effectiveness of heifer raising operations increases. However, overall, the development of interfarm cooperation in heifer raising operations progresses slowly. It is being retarded significantly due to the widespread diseases of tuberculosis and brucellosis in cattle.

Interfarm cooperation in Western Siberia is also occurring in sheep-raising. Since 1975, the "Runo" Sheep-raising Association has been operating in Tyumen' Oblast, consisting of four sovkhozes in the Golyshmanovo Rayon. Twenty-six percent of the oblast's sheep are concentrated in this association. Interfarm cooperation reserves are not being utilized in Gornyy Altay sheep-raising. Sovkhozes and kolkhozes here annually turn over more than 300,000 sheep to the state, of which approximately 270,000 are efficiently fattened after coming down from the mountainous areas on interfarm feeding areas. Such a form of cooperation in sheep-raising might be applicable for other regions of the country having similar environmental-economic conditions.

Several directions and forms have been defined for the development of interfarm cooperation in swine-raising operations for Western Siberia. Kemerovo and Tyumen' Oblasts have interfarm enterprises operating to fatten swine, and Novosibirsk and Omsk Oblasts, as well as Altay Kray have swine-raising production associations in operation.

High efficiency levels are being achieved in the "Omskiy Bekon" Production Association, which includes eight sovkhozes located in five rayons in the oblast. Three sovkhozes specialize in the production of commodity swine, one farm raises purebred (registered) animals and four produce grain. From 1973 through 1980, the production of swine in the association rose by a factor of 2.8 and reached 32.7 thousand tons, labor productivity rose by 34%, and profit exceeds 35%.

One of the directions in Western Siberia is the cooperation of public and private farms in the production of the final product. The joining of the individual sector in the production of meat based upon the cooperative system permits for the providing of a substantial supplement to that production. Transfer on a contract basis of piglets, goslings, ducklings, chicks and other types of animals and fowl for raising on the individual farms of village dwellers for subsequent sale to the state is an additional reserve for increasing production.

In establishing interfarm formations, it is expeditious to avoid the dual subordination of the cooperating enterprises. The creation of all possible interrayon management agencies is undesirable, as practice has demonstrated more than once the negative aspects of such reforms. Departmental differences and organizational isolation hamper the development of integrated processes at the sector juncture: as a rule, problems arise which entail spoilage and loss of ready produce. All this legislates for the creation of agroindustrial complexes at the territorial level. V.I. Lenin wrote on this count that for the revival of industrial and agricultural turnover, it was necessary to begin--with "the model formation of a small 'whole', but that 'whole' being precisely that, i.e., not a single farm, not a single sector of the economy, not a single enterprise, but the totality of all economic relationships, the totality of all economic turnover, even though for a small locality".

Proceeding from this and with allowance for specific conditions, it is incumbent that agroindustrial complexes be created within specific rayons, oblasts, and republics. That complex must include as a first priority sectors associated with the organization of material-technical supply to agriculture and the production and processing of agricultural produce. The rayon agroindustrial complex is the simplest initial element of this system.

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REGIONAL DEVELOPMENT

SCIENTIFIC SUPPORT FOR AGRICULTURAL PROGRAM IN KIRGIZSTAN DISCUSSED

Frunze SEL'SKOYE KHOZYAYSTVO KIRGIZII in Russian No 12, Dec 82, pp 18-20

Article by R. Sadykov, chief scientific secretary of the Presidium of the Academy of Sciences for the Kirghiz SSR and Corresponding Member of the Academy of Sciences for the Kirghiz SSR: "In Union With Production"

Text Within the republic there are approximately 3,000 doctors and candidates of science. The economic effectiveness resulting from the introduction of scientific works into the national economy is numbered in tens of millions of rubles.

The party and government have always attached and continue to attach great importance to the further development of agriculture, a vitally important branch of the economy. In the interest of achieving rational solutions for the urgent problems at hand, the May (1982) Plenum of the CPSU Central Committee considered it necessary to develop the food program, aimed at ensuring a continuous supply of products for the population. We are accomplishing a great deal in this regard at the present time.

Here are some examples. At the present time, many important problems associated with farming, animal husbandry, mechanization, electrification and the use of chemical processes in carrying out production operations on the republic's fields and farms are being solved based upon a union between science and labor. It cannot be otherwise. During the years of Soviet rule, our scientists have placed at the disposal of agriculture many new and highly productive varieties of agricultural crops and highly productive strains, lines and families of agricultural animals and they have developed more improved means for the mechanization of labor and progressive technologies and methods for creating a strong feed base and production organization.

The cultivation of new varieties annually provides the republic with hundreds of thousands of additional tons of grain.

In 1981 alone, winter wheat varieties developed at the Kirghiz Institute of Farming occupied more than 60,000 hectares. Naryn 27, Nutans 970 and Nutans 45 barley are presently being cultivated for feed use on an area of more than 130,000 hectares, or 75 percent of all areas occupied by barley. They are being grown in Kazakhstan on an area of 300,000 hectares. And the Altyn-Dan barley variety has also been regionalized in other republics. In addition, the new Dzhal, Nutans 9197 and Nutans 3001 barley varieties and wintering oats have been turned over for state testing.

The scientists are carrying out effective work with corn. Many of its varieties are exceptionally highly productive and are furnishing 120-150 quintals of grain and up to 700 or more quintals of fodder. In the future, viniculture will also undergo more extensive development, than is the case at the present time, in the southern regions of the republic, with use being made of the trickle method of irrigation, a method which is of considerable importance under conditions involving a shortage of irrigation water.

At the present time, as the country follows a course aimed at achieving agricultural intensification, extreme importance is being attached to accelerating the rates for plant breeding work, creating new and improving existing varieties and strains, retaining the genetic heritage accumulated through the centuries, making extensive use of international genetic resources and further intensifying a thorough study of genetic problems.

In solving the food program, an exceptionally important place is occupied by animal husbandry operations. During the 26th CPSU Congress, the task was assigned of developing it in a more intensive manner and improving the system of large-scale selection and breeding work. Work has been carried out for a long period of time in connection with improving the livestock. At the present time, we have already created such wonderful strains of large-horned cattle as the Alatauskaya and Aulieatinskaya strains. Native cattle which formerly were unproductive are now surprisingly enough displaying high productivity qualities. The republic's scientists are presently continuing their work aimed at further improving these two strains. One can readily accept the fact that further efforts by science and leading production workers will be directed towards developing individual types of cattle that will be suitable for maintenance in definite zones. The feed base of the branch is being strengthened. We have many industrial complexes for the production of milk. In particular, much is being done to further improve the brown strains. Some achievements in this regard are especially impressive. Our republic occupies a leading place in the country with regard to the proportion of pure-bred cattle in its herd. Here is an example. Taking advantage of the achievements of applied and population genetics, we succeeded in creating two new and highly productive plant lines of the Alatauskaya strain in 1981, which were approved by the USSR Ministry of Agriculture. A state committee of experts from the ministry placed a high value on the productivity indicators for these animals. This was promoted to a large degree by base complexes for the raising of heifers, the number of which has reached eight.

Some eminent scientific and practical achievements include: the creation of a new Kirghiz strain of horses and improvements in and the adaptation of existing hog strains to local conditions and so forth.

Selection-breeding work has increased noticeably in intensity following the publication in 1978 of the well known decree of the CPSU Central Committee and the USSR Council of Ministers entitled "Measures for Further Improving Breeding Work in Animal Husbandry." The Kirghiz Scientific-Production Association for Animal Husbandry, created several years ago in the republic, directed this work and is now playing a leading role in strengthening the bonds between science and production. This made it possible to achieve considerable successes in sheep raising. For example, the Kirghiz fine-fleece strain of sheep is well known at the present time. Eight new and promising plant lines of this strain were approved in 1981. The

average productivity indicators for the sheep surpass the indicators for plant flocks in terms of wool clippings by 0.7 kg per head and in live weight by 8.6 kg. Increases have taken place in both the pedigree resources of sheep raising and in the annual sales of improved pedigree animals. In 1980 alone, 209,000 sheep, more than 8,200 head of young large-horned cattle stock and 4,000 hogs were sold.

In discussing the republic's principal branch of animal husbandry -- sheep raising -- mention should be made of the fact that it underwent radical modernization during the years of Soviet rule. In October 1919, V.I. Lenin signed the decree entitled "On Protecting and Developing Fine-Fleece (Merino) Sheep Raising," which defined the general trend for developing sheep raising in our country. The adoption of this document promoted rapid growth in the number of fine-fleece sheep, based upon the mass reorganization of coarse-wool sheep raising, especially in such sheep breeding regions as Kazakhstan, Kirghizia and other Central Asian republics. Prior to the strain modernization which took place in sheep raising in Kirghizia, local fat-tail sheep were bred, the clipping of coarse wool from which did not exceed 1.5-2.0 kg per head.

The fine-fleece strain of wool-meat productivity sheep bred in the republic proved to be well adapted to the local mountain-pasture conditions; they successfully combine the productive and breeding qualities of the initial strains, which are distinguished by high vitality, strong constitutions and adaptive characteristics. The average live weight of rams at leading sheep raising farms is 110 kg and ewes -- 55-60 kg, with the clipping of wool being 11-12 and 4.5-5.0 kg respectively. The average fecundity for fine-fleece sheep is 135-140 lambs per 100 ewes.

The party and government have tasked the scientific institutes and practical workers in sheep raising with achieving further improvements in the wool and meat qualities of the sheep using the method of pure-bred breeding and crossings with the highly valuable Australian Merino rams. And scientists at the Institute of Biochemistry and Physiology of the Kirghiz SSR Academy of Sciences and the Kirghiz Scientific Research Institute of Animal Husbandry and Veterinary Science, using Australian Merino rams, achieved improvements at their breeding plants in the technological properties of the wool of sheep of the Kirghiz fine-fleece strain. This work will be continued.

Under the extreme conditions which prevail in Naryn Oblast, an early-maturing Tyan'-Shan' semi-fine-fleece strain of sheep was bred which meets the requirements for an intensification of sheep raising operations in the republic's mountainous zone.

The average live weight of rams of the Tyan'-Shan' semi-fine-fleece strain is 108 kg, with the weight of individual animals reaching 145-149 kg and the clipping of wool -- up to 10 kg. The average live weight for the ewes is 60-65 kg and the clipping of wool -- 4.5 kg. The average fecundity is 110-115 lambs and the maximum -- 160 per 100 ewes. There are presently approximately 800,000 sheep of the Tyan'-Shan' strain at kolkhozes and sovkhozes in Naryn Oblast.

In addition, as a result of the efforts of scientists at the Kirghiz Institute of Animal Husbandry and Veterinary Science, work was completed in 1981 in connection with the breeding of a new semi-coarse-wool fat tail strain of sheep having white wool and an optimum combination of high meat-tallow-wool productivity with fine adaptability to the extreme conditions which prevail in the Alayskaya Valley. The

average live weight of the pedigree rams is 102 kg and that of the ewes -- 63 kg. The average fecundity of the ewes over a period of a number of years is 105-107 lambs for every 100 ewes. The clipping of wool from the rams is approximately 5 kg and from the ewes -- 3 kg and 200 grams. There are presently approximately 30,000 head of the Alayskaya strain of sheep. In the future, the valuable wool of the Alayskaya sheep will be the principal raw material for the republic's carpet industry.

Definite work is being carried out in connection with creating a highly productive flock of down and wool goats and improving the methods for breeding them. Scientists at the Kirghiz Scientific Research Institute of Animal Husbandry and Veterinary Science have formed a valuable flock of a group of pedigree Kirghiz down and wool goats, which is distinguished by high productive indicators. Further scientific research work is aimed at consolidating this desirable type of animal and creating new strains of down and wool goats.

The republic's scientists have warmly welcomed the decree of the CPSU Central Committee and the USSR Council of Ministers entitled "Measures for the Further Development of Sheep Raising in the Kirghiz SSR." This decree establishes the tasks of further increasing the number of sheep and the production of sheep raising products at kolkhozes and sovkhozes throughout the republic. An indispensable condition for the successful carrying out of these tasks is persistent improvements in the organization of scientific research work, improving the quality and carrying out more thorough scientific studies in each scientific collective and developing a progressive technology and system for the feeding and maintenance of sheep for the specific zones in which they are bred, while taking into account the availability to the farms of the required feeds, labor resources and production funds.

By way of attaching great importance to those problems concerned with the further and intensive development of sheep and goat raising in Kirghizia, the Presidium of the Academy of Sciences, the republic's Ministry of Agriculture and the Kirghiz Agricultural Institute developed an all-round program for scientific-research work to be carried out during the 1981-1985 period. A problem council entitled "Mountain Sheep Raising" was created which brings together leading scientists and the republic's best specialist sheep breeders.

At the present time, a tremendous amount of importance is being attached to further improving the scientifically sound system of sheep raising in keeping with the specific soil-climatic conditions prevailing in the republic's oblasts, rayons and farms and developing economic maintenance technologies, intensive methods for the reproduction of sheep and methods for lowering the production costs for sheep raising products and improving the profitability of this branch.

On the whole, success in the further development of agriculture is greatly dependent upon the manner in which our scientific institutes and agricultural organs in the various areas expand their work of intensifying the branch and improving the organizational, technological and selection-breeding operations and also upon the proper utilization of scientific achievements and leading experience, which promote improvements in the effectiveness of the branch.

The implementation of the party's food program, which is associated with the conversion of agriculture over to a modern industrial basis and to the path of

increased specialization and agroindustrial integration, will make it possible during the next decade to raise the effectiveness of the branch considerably. Here a very important role will be played by scientific-research work carried out throughout the republic in close association with the practice of agricultural management.

Photo Caption: (photo not reproduced) Electric plants of Kirghiziya at present produce more than 10 billion kilowatt hours of electric power -- more than previously produced by all plants built by the GOELRO plan. Photo shows the dispatcher point of Kirgizglavenergo. It is precisely here that the entire energy system of the republic is managed. Dispatcher A. Dzingel' is in the foreground.

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REGIONAL DEVELOPMENT

WHEAT CROP DEVELOPMENT IN OMSK OBLAST

Moscow NEDELYA in Russian No 21, 24-30 May 82 p 9

Article by E. Mal'bakhov, Omsk: "Wheat for Siberia"

Text "...The chief concern today, and even more that of raising the cropping power. This implies devoting greater attention to both plant breeding and seed production. It assumes the effective use of all types of fertilizers. It requires the introduction of a scientifically sound system of farming, one which fully takes into account the natural-economic conditions of each zone and oblast, each rayon and each farm."

L.I. Brezhnev. From his report delivered before the May (1982) Plenum of the CPSU Central Committee.

These small almost toy loaves, with their light-yellow sides and ruddy-colored upper crusts, are very tempting in their appearance. Only they were baked not in a conventional bakery but rather in a plant breeding center, where such bread is considered to be laboratory material and is not eaten but rather is tasted in the manner of wines. Just as with any experimental product. Importance is attached to the smell, the color and the delicate taste nuances. And how does a loaf react to cutting and breaking? Does it crumble to an excessive degree? And how soon does it spoil or become stale? The overparticular specialists impose many requirements with regard to a loaf made from a "freshly baked" variety of wheat and they are not too quick to say that it is "good." But in addition to being good, highly productive and "tasty," a variety must also be "suitable" for local conditions and amenable to the total amount of temperature and the amount of precipitation and solar energy -- will the figures for these factors be adequate?

It was a cold January day when I visited the West Siberian Breeding Center (city of Omsk). Beyond the transparent walls of the hothouses, one could see the huge snow drifts and yet inside the ears on the high golden stalks were ripening and the time was already at hand for commencing the "harvest." On dozens and even hundreds of miniature fields, the "ancestors" of future Siberian wheats were reaching out for the light.

At least three out of every five years are extremely dry on the virgin lands in the southern part of the Omsk Irtysh region. This region requires drought resistant

wheat with strong stalks and not too late-ripening. Moreover, its food properties must remain high and, it goes without saying, the cropping power must not be low.

And so new varieties came to life. They came to life in hothouses and on experimental plots of the plant breeding center and also on the tracts of sovkhozes which maintain close business contacts with the Siberian Scientific-Research Institute of Agriculture. During the Ninth Five-Year Plan, five new promising varieties were regionalized on fields in Omsk Oblast and its Siberian and Kazakhstan "compatriots in the zone of risky farming" and during the 10th Five-Year Plan -- 15 new varieties. In addition to wheat, these figures also included rye, barley, oats and millet. There is also a need during our time for more and more of these "grey crops": without them it is impossible to improve animal husbandry. But today our discussion centers on wheat.

We rambled about the fields with the director of the Elita Sovkhoz, Fedor Voytenko. It was hot -- over 30 degrees (late August of last year). A kilometer trail of dust followed the motor vehicle. Sweetclover that had been sown for seed dried out to such an extent that its tall stalks became hard and brittle. There was good reason for last year's drought being categorized as catastrophic. And the wheat stood dense and erect and its heavy ears reminded me of what I saw on the experimental tracts of the plant breeding center.

"It is the new Almaz (diamond) variety" stated the director, "It has been given a good name, has it not?"

Not only was the name good! During this scorching hot weather, the sovkhoz obtained 25 quintals per hectare and supplied the state with more than 10,000 tons of strong and valuable Almaz grain, which is as good as a durum variety even for classical spaghetti.

Thus the value of the new variety was based upon "three factors" -- valuable food qualities of the grain, high cropping power and regional suitability.

The cropping power problem, which does not seem strange at first glance, is less complicated than other problems. Even Dostoyevskiy in his "Notes From the House of the Dead" noted that: "The yield in some areas is 15 proper... Generally speaking, the land is blessed. It merely has to be used. In Siberia they are able to use it." Exactly what does "15 proper" mean? During the past century, 6 poods of grain were sown in a conversion for a hectare -- almost a quintal. Thus, a yield was obtained in some places of 14-15 quintals. Today the average sowing norm is approximately one and a half quintals and the yield for an area is dozens of times more and at times even "20 quintals proper." And this is for a reading not for 6 poods but rather for 10. But what about tomorrow? Tomorrow it will be even higher: new Siberian varieties will be added to the fields. This is why I wish to single out in particular the following phrase:

"In 1982, new and highly productive varieties of grain crops will be grown on an area of 1.6 million hectares."

The workers in Omsk Oblast are also addressing themselves successfully to another factor -- the bread must be tasty.

Certainly, the word "tasty" is not found in scientific terminology. On the other hand, the laboratories at the plant breeding center contain clever instruments which with mathematical precision can determine the properties (including taste characteristics) of flour. A pharmaceutical dose of flour is mixed in a special container and thereafter small "pancakes" no larger than a ruble coin are tested for resiliency and expansibility: the edges of the pancakes are squeezed against the periphery of a cylinder into which air is blown, thus inflating the dough in the form of a bubble. At this time, an automatic recorder traces its intricate curves on graph paper.

In the laboratory I was shown a unit used for preparing macaroni and vermicelli. And here we are also dealing not with a conventional "kitchen," but rather with accurate science. It turns out that the unscientific concept of "taste" is very closely associated with such scientific categories as batch time, dough strength and stability of the dough. The strict figures correctly indicate whether or not a gourmand will be pleased with the macaroni. Everything is clear -- whether or not you boil and try it. But nevertheless go ahead and boil it and taste it.

The validity of the "second factor" is dependent to a considerable degree upon the grain growers themselves. Indeed the grain of a strong variety may at times not increase in strength if the sowing was carried out late, or a portion of it may even be lost if it is handled in a negligent manner on the thrashing floor.

Today the experience of the Sibiryak Sovkhoz, the director of which is Hero of Socialist Labor and deputy to the USSR Supreme Soviet Aleksey Petrov, is known throughout Omsk Oblast. On the vast fields of this most southern farm, they learned how to determine in advance those tracts from which the most valuable grain is obtained and they began to guess in an irreproachable manner with regard to the periods for commencing, and even more important, completing the harvest campaign. Indeed, it is not excessive if an ear which has just ripened at times stands for a day or two and accumulates greater productivity. Highly refined technological methods have been developed on the thrashing floors for forming batches of select grain. Today it is rare for an oblast farm not to have its own laboratory where a meticulous analysis can be carried out on the quality of the grain harvested. And the overall result also takes the form of a large "round" figure:

"Omsk Oblast supplies the state's granaries with 1 million tons of strong, durum and valuable grain and the Omsk workers are still strong suppliers of high quality seed."

A third problem -- the ecological suitability of a new variety -- is very complicated. This year the next product of the Siberian plant breeders will appear -- Atlant durum wheat. This variety holds great hope for the future. Wishing to know the details behind the creation of the Atlant variety, I met with the head of the laboratory for durum wheats, Vera Alekseyevna Savitskaya.

"In the case of Atlant" she related, "we used as the 'paternal' specimen a variety of Canadian awnless wheat and for the 'maternal' -- an awned Kazakhstan wheat that is accustomed to severe drought conditions."

"Did you obtain the variety after crossing them?"

"No, rather than a variety, we obtained only a hybrid and it is still not known what this will produce. A so-called breaking up occurred following the sowing of the hybrid -- numerous diverse lines having various qualities, both necessary and unnecessary."

"And you select the best line and..."

"From 100 or 200 offspring, we select 20 which are more or less promising and again we sow them on experimental plots. We obtain fine variety specimens."

"From which it is easy to determine the best?"

"No, many tests are required, carried out under difficult and even extreme conditions for the plants. A certain "callousness" must be displayed -- a rejection of types which have good cropping powers but are oriented more towards hothouse conditions. One specimen remains at the end of the process, which during the course of final testing emerges as the true variety, the one we were searching for -- durum, awnless, drought resistant, with large grain and highly productive."

"How long did the search last?"

"We began in 1969 and Atlant came into being in 1979. At the present time, state testing of this variety is nearing completion and before long it will be disseminated on an extensive scale."

A fine variety has been developed -- yet work must continue aimed at obtaining a better one. Today the Omsk scientists are working on grain crop varieties which, with no exaggeration, could be referred to as the grain of the 21st century. The plant breeding process is usually carried out in behalf of the remote future and the process is a continuing one. But is it not possible to accelerate it?

Prior to the beginning of May, the ears ripened once again under the glass roofs: the wheat was sown in January. This was the first yield of a complex of new hothouses -- six units of 320 square meters each. Each unit has its own air conditioning system with temperature and humidity automatically controlled.

A large phytotron for 25 artificial climate chambers, built at Omsk, is proving to be of assistance in expanding appreciably the field of studies and, it follows, in accumulating scientific data more rapidly. These chambers are metal booths 3 meters in height and filled with electronic instruments, air conditioners, sprinklers, "solar light" units and powerful fans. A "plantation," an area with a carpeted living room, can be subjected to all of the vicissitudes of uncontrolled nature: frosts on the soil and dry winds, sharp cold snaps, excessive moisture and also other adversities of a local climate. Here it is possible to simulate the soil of any zone. A chief factor here is the possibility of obtaining 4-5 yields annually. Moreover, it is easier to create a variety possessing precisely the breeding qualities desired.

"As a rule, 13-15 years are required to breed a variety" stated an executive of the plant breeding center, Kamil' Galiyevich Aziyev, "But one of the last wheats of the Omskaya family we succeeded in obtaining in just 7 years -- Omskaya-16. There is still another means for accelerating the dissemination of new wheats. Actually, the

usual period for the propagation of seed following regionalization (regionalization is also a long period involving checks, tests and thereafter official recommendations for cultivation in definite zones) is intolerably long. Many years may pass while the arable land is awaiting the arrival of select grain. But we have already tested our own Omsk variant and the introduction of new varieties into production operations with the aid of dozens of farms with whom our institute (SibNIIskhoz) and its plant breeding center maintain contractual relationships. Meanwhile, the "variant" of the variety has still not been officially accepted by the ministry (it is still undergoing checks at state strain testing stations) and it is simultaneously undergoing production tests over large areas.

Today the plant breeding center has 52 supporting farms in 14 oblasts in Siberia and Kazakhstan. So there is room for expansion!

The west Siberian plant breeding center and its supporting farms are providing the means for accelerating the breeding and dissemination of new grain crop varieties.

* * *

Spring has arrived on the fields in the Omsk Irtysh River region. This year the hoppers of the sowing units will contain greater quantities of good quality seed than was the case last year. The plant breeders are doing everything possible to ensure the successful implementation of the country's food program.

And the threshing of the next May yield has commenced in the silence of the laboratories. Flour is being ground on a miniature mill and appetizing loaves of bread weighing from 5 to 100 grams are again being baked. Some of the freshly-baked items will necessarily serve as models for the light and fluffy Omsk loaves of the "Harvest-2000."

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NEW GRAIN VARIETIES IN OMSK OBLAST

Omsk ZEMLYA SIBIRSKAYA, DAL'NEVOSTOCHNAYA in Russian No 8, Aug 82 pp 16-17

Article by K.G. Aziyev, candidate of agricultural sciences and director of the West Siberian Plant Breeding Center of the Kolos Scientific Production Association: "Effectiveness of New Varieties"

Text In Omsk Oblast, a great amount of attention is being given to strain changing and to the replacement of old low productivity varieties by new and highly productive ones, as an important factor for obtaining high and stable grain crop yields. In recent years, as a result of the organization of plant breeding centers in Siberia and following an extended interval of time here, varieties of crops have been created which possess a complex of economically valuable properties and which are capable of furnishing from 50 to 60 quintals per hectare during productive years. These include the spring wheat varieties Omskaya-9, Irtyshanka-10, Novosibirskaya-67, Sibakovskaya-3, Tselinnaya-20, Rossiyanka, Shadrinskaya, Vera, Omskaya-12, Omskaya-17, Vega, Almaz and Altayka, the barley varieties Tselinnyy-9, Omskiy-80, the oats varieties Omskiy Kormnovoy, Ural and Omskiy-81, the millet variety Omskoye-10, the vetch varieties Omchika, Novosibirskaya, the winter rye variety Korotkaya and others.

The midseason to late Omskaya-9 spring wheat variety, which possesses a high resistance against lodging and provides a cropping power during damp years when sown following fallow of 60-70 quintals per hectare, enjoys great popularity throughout the oblast. In 1980, on fields of the Novoural'skoye OPKh /Experimental Model Farm/ of the Kolos NPO /Scientific Production Association/, an average of 34.3 quintals per hectare was obtained from an area of 11,000 hectares and from individual tracts -- 45-50 quintals. In Novovarshavskiy Rayon, this variety produced 22.2 quintals per hectare for 41,000 hectares, whereas Saratovskaya-29 furnished 17.3 quintals, or 4.9 quintals less per hectare, for an area of 32,000 hectares. For Omsk Oblast on the whole, this variety of wheat produced 23.2 quintals per hectare for an area of 298,000 hectares and Saratovskaya-29 -- 16.7 quintals per hectare for an area of 672,000 hectares. During the dry year of 1981, Omskaya-9 turned out to be more resistant to drought conditions and more productive than Saratovskaya-29 by 2-3 quintals per hectare.

The Omskaya-9 variety was recommended for extensive introduction during the 1979-1982 period in the steppe and southern forest-steppe zones of nine krays, in oblasts of Siberia and in northern Kazakhstan. In the oblast's sowing structure for wheat, this variety occupies 70 percent of the zone of cultivation. In recent years, this variety has occupied 79 percent of the wheat sowing area at the

Novoural'skoye OPKh. It was by no means an accident when in 1980, on an area of 20,000 hectares at the farm, the average cropping power reached 32 quintals per hectare and on the third section, from an area of 3,000 hectares -- 37 quintals.

Another highly productive strong wheat variety, Irtyshanka-10, was regionalized in 1981-1982 in the forest-steppe region of Siberia. It ripens earlier than Saratovskaya-29 and Novosibirskaya-67 by 2-5 days and it possesses a high potential cropping power. In 1980, at the Omskoye OPKh of the Kolos NPO, the grain cropping power from a sowing following fallow amounted to 46.4 and in 1981 from a sowing of a second crop following fallow -- 31.4 quintals per hectare. This variety produced high yields at a number of farms in Omsk Oblast (Boyevoye OPKh, Nizhneirtyshskiy Breeding Plant and the Zavety Lenina Kolkhoz in Tarskiy Rayon).

The Omskaya-12 wheat variety, bred for the sub-taiga and taiga zones and which ripens 2 days earlier than Lade, is distinguished by a somewhat raised drought resistance, stability of the seed against sprouting and a raised protein content (by 0.53 percent). According to data supplied by state strain testing stations, the new variety surpasses the regionalized Lade and Skala varieties by 2.6-4.3 quintals per hectare in the oblast's northern rayons. Its advantages have been confirmed by sowings carried out on a majority of the farms in Tarskiy and Sedel'nikovskiy Rayons. In terms of cropping power, it surpassed the Lade variety in 1979 at the Kolkhoz Zavety Lenina in Tarskiy Rayon by 7.9, the Kolkhoz imeni Dzerzhinskii in Sedel'nikovskiy Rayon in 1981 by 5.1 and the OPKh imeni Frunze of the Kolos NPO -- by 2.4 quintals per hectare. The variety underwent official state strain testing in 1981.

In 1982 the gosortoset' state strain testing network is testing a midseason ripening variety of wheat -- Omskaya-17 -- which is deserving of attention and which in terms of its growing season and grain quality is on a par with Saratovskaya-29.

Over the past 20 years, in many oblasts in the European part of our country, the second strain changing for winter wheat has been completed and this has ensured a noticeable increase in cropping power. At the same time, an opportunity has appeared in Siberia for carrying out only the first strain changing and then not in all zones or for all crops. Here the grain economy is still relying upon such extensive type varieties as Skala, Saratovskaya-29, Strela, Lyutetsens-758 and Khar'kovskaya-46 wheats, Pobeda, Zolotoy Dozhd' oats, Ramonskiy-77 peas and Vyatka rye and this is clearly restraining further growth in the gross yields of grain. Thus one of the chief tasks of Siberian farming is that of carrying out strain changing. At the same time, the work of replacing old varieties with new ones, following their regionalization, requires 5-8 years. In the past, 10 years (1960-1969) were required for the introduction of the Saratovskaya-29 spring wheat variety into operations in Omsk Oblast.

Taking this fact into account, substantial measures were undertaken in Omsk Oblast aimed at reducing the periods for converting over to the use of new varieties. The introduction of varieties is being carried out in accordance with a special purpose all-round program which includes organizational and technological measures. The essence of this system consists of commencing the propagation of seed from the best variety specimen 5-6 years prior to its regionalization, following the first year of testing in a competitive nursery. For a more objective evaluation and successful

selection of a variety, a study of it is organized on the fields of the Seed Production Department of the breeding center and the experimental and base farms of the Kolos NPO. The production of seed for new varieties has increased considerably at experimental farms of the association. A fine example of work carried out in accordance with the new system is the experience accumulated in introducing Omskaya-9 spring wheat into operations in Omsk Oblast, where the variety was sown on the planned area in its third year following regionalization.

One element of the system is a study of new variety specimens on fields of the Seed Production Department of SibNIISKhOZ /Siberian Scientific Research Institute of Agriculture/, according to the type of competitive strain testing. Since 1973, primary seed production workers T.I. Borid'ko and A.A. Gololobova and also scientists from OmsKhi /Omsk Agricultural Institute imeni S.M. Kirov/ have been carrying out tests on the best variety specimens of wheat, barley and oats, compared to promising varieties which have been regionalized in the oblast. As a result, a number of varieties were singled out long before their official recognition. The Omskaya-9, Sibiryachka-8, Omskaya-12 and Omskaya-17 wheat varieties, the Olimp and Omskiy-80 barley varieties and the Omskiy Kormovoy, Sibirskiy and Omskiy-81 oats varieties were recommended for production testing.

In the rapid propagation of seed, a tremendous role is played by experimental farms, which commence the testing and propagation of new varieties in the first year that they are turned over to the State Strain Testing Network. It was for this purpose that the large Kolos Scientific Production Association was created in the oblast. For the 1982 sowing operations, it sold approximately 20,000 tons of seed of high reproductions, with more than 16,000 tons of this amount representing new varieties. Future plans call for seed sales to be raised to 32,000 tons, with 18,000 tons of this amount to be used for carrying out strain changing work; this latter amount will be sufficient for sowings on the propagation tracts of all farms in the oblast during the first year of regionalization for the new varieties. During the past few years, based upon a decision handed down by the Omsk Oblast Executive Committee, the Kolos NPO has been given a plan for the sale of seed for new and as yet non-regionalized varieties which is over and above the plan for strain renewal. This is being done only in Omsk Oblast.

One important element of the system for the accelerated development of new varieties is that of extensive production testing for them, carried out in various soil-climatic zones. This testing was carried out for the first time in Omsk Oblast where, commencing in 1977 and based upon a decision by the Omsk Oblast Party Committee and the Oblast Executive Committee, a base farm was created in each rayon. During the ensuing years, such farms have been organized in 15 republics, krays and oblasts throughout the country. One of the best forms for checking upon and publicizing new developments in plant breeding is that of testing new varieties long before their regionalization. A demonstration of the promising varieties directly on the fields of kolkhozes and sovkhozes ensures that the leaders and specialists of a farm, rayon or oblast become acquainted with them in a timely manner and that seed for the more productive varieties is reproduced in advance.

Varieties are being introduced into operations throughout the oblast in accordance with this new system not only on individual farms but also in entire rayons -- Kalachinskiy, Novovarshavskiy, Tavricheskiy, Russko-Polyanskiy and Odesskiy. This year, 80-85 percent of the seed sown here has been that for new and highly productive varieties.

As a result of purposeful work having been carried out, Omsk Oblast has the largest area sown in new varieties. Varieties regionalized since 1975 constitute 45 percent of the grain crop sowing structure here, whereas in Kurgan Oblast -- 20.4, Altay Kray -- 7.8 and in Novosibirsk Oblast -- 1.7 percent. The introduction of such varieties into operations is proceeding at an accelerated rate in Omsk Oblast, where the increase in new varieties during 1981 alone amounted to 24.5 percent.

On those farms throughout the oblast where noticeable achievements have been realized in the culture of farming in recent years, the cropping power of the grain crops has been raised appreciably. The introduction of varieties in accordance with the Omsk system has made it possible for the Omskaya-9 wheat variety to be sown on the planned areas in a number of oblasts in record breaking time and it has ensured an increase in the grain harvest of 1.3-1.5 million tons, or 78-90 million rubles worth of net income.

The food program adopted during the May (1982) Plenum of the CPSU Central Committee confronted the plant breeders with new and great tasks. During this plenum, L.I. Brezhnev stated that the chief task today, and even more so tomorrow will be that of raising cropping power. This signifies the moving into the foreground of plant breeding and seed production work. The oblast's agricultural workers and scientists of the west Siberian Plant Breeding Center are striving to do everything possible to achieve this goal. The plant breeders are preparing to turn over to Gossortset' a number of more improved varieties in the near future. This represents their contribution towards solving the country's food program.

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AGRO-ECONOMICS AND ORGANIZATION

UNIFIED SYSTEM FOR UKRAINIAN AGRO-INDUSTRIAL ASSOCIATIONS

Kiev SIL'S'KI VISTI in Ukrainian 4 Dec 82 p 2

Article by P. Hayduts'kyy, department chief, UkrSSR Ministry of Agriculture, candidate of economic sciences: "A System for Forming Agro-industrial Associations"

Text The USSR Provisions Program expects to bring about a change-over to planning agro-industrial complex activity and its administration as a unit on all levels, and to achieve a balanced development and close cooperation of all its branches. It was, therefore, considered expedient to coordinate the enterprises and organizations of State Committee of Agricultural Technology, Union Agricultural Chemistry, Ministry of Land Reclamation and Water Resources, construction, procurement, transport and other organizations which service agriculture with kolkhozes and sovkhozes both from an organizational and economic standpoint.

An accord between farms, enterprises and organizations of the agro-industrial complex in an organizational relationship consists in providing unity in their territorial administration through the establishment of agro-industrial associations on rayon and oblast levels directed by special soviets without abolishing their economic independence, judicial identity and departmental assignment. The establishment of such associations is the organizational beginning in a complex administration of the making and further development of the agro-industrial complex as a single and whole economic organism.

Some experience in this matter has been accumulated especially in a number of rayons in the Russian SSR, Ukraine, Georgia, Latvia and Estonia.

It was stressed at the May (1982) CC CPSU Plenum that one of the characteristics of our country's agriculture is the unusual variety in production and natural-climatic conditions. Consequently, there can be no common approach in resolving specific issues about branch structure and the economic contents of rayon and oblast agro-industrial associations.

Experience in Latvia, Estonia and Georgia shows that in forming agro-industrial associations we cannot be satisfied with just imitating obvious practical experience which might have a limited local success. It would also be erroneous to depend on empirical estimates or intuitions. Deep and all-around scientific and practical support is needed for decisions relating to the establishment of agro-industrial associations.

Integration processes provide the essence for changes which promote formations based on agriculture and related to it agricultural branches of the agro-industrial complex as a unified economic system with single economic mechanisms and administration organs. The development of these processes is based on continuous extension of social work division under the influence of scientific-technical progress. It includes the following basic stages: the appearance of new specialized productions; their development; branching off from visible branch formations; their making and transformation into independent new branches; further accord between these branches and the branches of another production sphere; integration of these branches into new inter-branch complexes and associations. A change in specific relationships between productions and branches is a prerequisite and result of each of these stages. The separation of cattle fattening from plant growing and its approximation to enterprises in the food and processing industry, first in beet sowing rayons, was preceded by a weakening in cattle raising feed ties with agriculture and a strengthening of these ties with above mentioned industrial branches. Similarly, the development of mixed feed industry and an increase in feeding fowl with mixed feed, especially in grain sowing rayons, promoted a branching off of fowl raising from plant growing, and a closer cooperation with mixed feed production.

Thus in the dynamics of social production the development of integration processes is done on the basis of inter-branch ties which occurred beforehand. This regularity can now be clearly observed in inter-branch relations in feed exchange. Some inter-farm enterprises, which were established on a narrowly specialized industrial basis (especially the Terebovliya enterprise for hog fattening in Ternopol Oblast) and which fulfilled their activity mainly on the basis of bought feed (or according to the principle of "minimizing" internal feed exchange relations) did not provide the expected results. Therefore, some of these enterprises were reorganized into farms with the functions of an inter-farm cooperator, where basic feed exchange relations are almost completely closed.

At the same time inter-farm enterprises are functioning successfully especially the Dunayevetske hog fattening enterprise in Khmel'nitskiy Oblast which fattens animals mostly on their own feed (or according to the principle of "maximizing" internal feed exchange relations). At the above mentioned enterprise, for example, in addition to the hog complex there is a plant growing section over 900 hectares, a mixed feed factory, and also subdivisions of work and technical

resources for providing uninterrupted functioning of the whole technological process from growing, procurement and feed processing up to feeding.

A number of kolkhozes in Krym Oblast can testify to the high effectiveness of integrating agriculture with related industrial branches on the basis of existing branch ties.

Overall, research shows that production structure improvement effectiveness and activity effectiveness of specialized and integrated economic formations, including rayon and oblast agro-industrial associations (in the Baltic area, for example) is secured when organizational decisions on specialization and integration were developed on the basis of an analysis of inter-branch ties.

All of this shows that the study and analysis of inter-branch ties in the agro-industrial complex promote the anticipation of existing objective necessity in organizational changes and an improvement in economic formation structure. As to the present state of agro-industrial complex development it provides an opportunity to determine possibilities, first of all, for further expansion of economic subdivision specialization, and secondly, for their rational, organizational and economic integration within the framework of agro-industrial enterprises, rayon and oblast agro-industrial associations. Therefore, argumentation for integration process direction within regions (oblasts, rayons) should begin with deep and all-around analysis of the functioning and development of inter-branch ties. An inter-branch analysis should also be the basis for technical-economic argumentation in creating specialized farms and agro-industrial enterprises and associations, both rayon (RAPO) and oblast (OAPO).

Determining the nature of inter-branch ties as a mechanism in the formation of the agro-industrial complex has, in our opinion, an important meaning in a systematic approach to preparing proposals for specialization and integration. A method of quantitative (formalized) analysis of inter-branch ties is needed for immediate technical-economic argumentation for specific organizational decisions, especially after establishing agro-industrial associations.

This method is needed for use with computing technology.

Oblast and rayon centers now have a considerable number of computers. Their efficient use yields a quick and qualitative analysis of inter-branch ties, a consequent development of branch structure, enterprise composition and the economic mechanism of agro-industrial associations on a high organizational-systematic level. For example, in Malinskiy Rayon, Zhitoimir Oblast, at the rayon information-computing station PVF-M5000 complexes were used and the accounting on most agricultural, industrial and other enterprises was mechanized. Thus, a considerable amount of statistical data on the agro-industrial

complex is being already compiled. Unfortunately, wide application of available computers for a full servicing of the agro-industrial complex is being delayed by the slow introduction of complex mechanized bookkeeping accounting and an integrated system of planning-accounting tasks.

Scientists must also work on solutions to these problems. With the change-over to new planning, financing and administration of the agro-industrial complex as one unit using computers the need for unity in information and programming became acute.

To create the essential agro-industrial complex informational basis a common, typical plan for complex bookkeeping accounting mechanization is needed in place of the now existing plans for separate agro-industrial branches. Scientific-research institutions should issue appropriate recommendations for achieving a fuller inter-branch comparative information. In our opinion, it would be worthwhile to introduce registers reflecting inter-branch and inter-farm exchange of activity results rather than having separate branch account registers.

An example of such a register, now used, is a table on feed utilization in various annual kolkhoz reports. It contains information both on receipt (sources and amount) and on feed consumption, and provides, therefore, appropriate information for an analysis of inter-branch feed exchange ties. Up to now, such documents, containing information on inter-branch ties and relations, have not been prepared for other spheres of economic activity.

To develop programs for electronic computing machines introducing an integrated system of planned accounting a change is needed from qualitative characteristics in inter-branch ties to the amount of their formalization.

Based on data about inter-branch activity in the region (rayon, oblast) arranged in a table according to inter-branch balance, the level of mutual agreement in inter-branch relations may be determined and an analysis of ties in other essential directions may be conducted. Information can be obtained about inter-branch as well as inter-kolkhoz activity exchange if instead of branches their appropriate economic formations are considered. Branch and agro-industrial association economic composition is formed based on indices showing closeness of inter-branch relations with the aid of appropriate selection function according to the principle "minimization of external and maximalization of internal ties".

A reasonable combination of general methodological principles to establish the national economic agro-industrial complex with regional characteristics in the development of integrational processes utilizing EGM would solve the task of forming RAIC and OAO on a high organizational-systematic level with sufficient scientific-

practical argumentation. Scientific research organizations, especially, should direct their efforts towards solving these goals.

In our republic a leading role in this could be played by the Southern Section of VASKhNIL and its scientific subdivisions in close cooperation with oblast and rayon planning and economic organs.

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AGRO-ECONOMICS AND ORGANIZATION

SCIENTIFIC, TECHNOLOGICAL PROGRESS IN AGRICULTURE LAGGING

Moscow SEL'SKAYA ZHIZN' in Russian 28 Dec 82 p 1

Article: "Scientific Achievements -- For Production Operations"

Text In the plans for the economic and social development of our country, an important place is occupied by measures aimed at implementing the food program. With each passing day, the workers in agriculture and other branches of the agroindustrial complex are intensifying their efforts directed towards ensuring that the considerable resources being employed for carrying out this program furnish a rapid and perceptible return. The country has the required reserves at its disposal for accomplishing this, with the most important of these reserves being an acceleration in scientific-technical progress and the extensive and rapid introduction into production operations of scientific and engineering achievements and leading experience.

Never before have we possessed such a great scientific-technical potential for the comprehensive development of production and raising its efficiency and for improving the working conditions and daily routine of our people. This also applies to the agroindustrial complex and its agrarian sector. During the years of the 10th Five-Year Plan alone, many new varieties and hybrids of agricultural crops were developed and improvements were carried out in the means of mechanization and in the technologies and methods for organizing production, thus making it possible to raise production efficiency considerably. By skilfully taking advantage of these improvements, many farms are achieving noticeable increases in their production of field and farm products and they are lowering their labor and material expenditures. For example, the use of triple-strain crossing methods developed by scientists at the Belorussian Scientific Research Institute of Animal Husbandry and strain-linear hybridization in pig farming has made it possible for many farms throughout the republic to increase their yield of offspring per principal sow by an average of 6.6 percent and the average daily increase in weight for the animals -- by 5.7 percent.

As is well known, the problem of accelerating scientific-technical progress in agriculture has been raised on more than one occasion during party congresses and plenums of the CPSU Central Committee. Nevertheless, the work continues to proceed slowly. One reason for this, as mentioned during the November (1982) Plenum of the CPSU Central Committee, is the absence of proper exactingness and responsibility for the introduction of new equipment and technologies and imperfections in the methods for planning and issuing material incentives. "If we wish" stated the general

secretary of the CPSU Central Committee Yu.V. Andropov during the plenum, "to truly advance the work of introducing new equipment and new work methods, then the central administrative organs, the Academy of Sciences, the GKNT /State Committee for Science and Engineering/ and the ministries must not merely publicize them, but rather they must uncover and eliminate the specific difficulties which are impeding scientific-technical progress."

Experience testifies to the fact that there are still many bottlenecks and shortcomings associated with the work of introducing scientific and technical innovations into operational practice. To a considerable degree, they are caused by the fact that inter-departmental collaboration in the development and implementation of technical, technological, organizational and other solutions and in making them available for use in production operations has not been properly organized. For example, the industrial technology for sugar beet cultivation has already been in use for several years and is still not being employed on 1 million hectares, even though this crop is being sown on almost 4 million hectares throughout the country. What is preventing this progressive technology from being employed on all of the beet growing fields? First of all, as borne out by the specialists, there is a shortage of effective herbicides, the production of which by the chemical industry is proceeding very slowly. The work is also being held back as a result of weak support for the beet growers with regard to their being supplied with the means required for mechanizing a number of important production processes. Similar reasons are offered for the slow introduction into production operations of industrial technologies for the cultivation of corn, sunflowers and some other crops.

The fact that many enterprises of agricultural machine building are not ensuring the large-series production of the required grouping of equipment, as called for in the system of machines for the all-round mechanization of agricultural production during the 1981-1985 period, reflects very poorly upon technical progress in agriculture. For example, there should be 92 types of machines and implements for the K-701 tractor and yet only 19 are being produced, that is, only one fifth of the required number. As a result of incomplete deliveries of equipment and other production resources to the rural areas, the labor intensiveness associated with the production of field and farm products is decreasing slowly and the return from capital investments and production capital is not increasing.

From an objective standpoint, the food program requires the rapid overcoming of the departmental approach with regard to scientific-technical support for its practical implementation and the subordination of the work of all branches of the agroindustrial complex to achieving the highest final result. The principal efforts must be directed towards increasing the volumes and lowering the prices for agricultural products, while ensuring their complete preservation and use. The ministries of agriculture, land reclamation and water management and agricultural machine building, Goskomsel'khoztekhnika, other departments of the agroindustrial complex, VASKhNIL /All-Union Academy of Agricultural Sciences imeni V.I. Lenin/ and the USSR Academy of Sciences must organize inter-departmental collaboration among the scientific, planning and design institutes and enterprises in a manner such that the development and introduction of new and progressive developments into operational practice is accelerated to the maximum possible degree and creative thought among the scientists and leading experience flourish.

Improvements must be carried out in the service responsible for introducing scientific-technical achievements into agricultural production. Such subunits exist

today only in the union and republic ministries and the kray and oblast agricultural administrations. At the rayon level, where for all practical purposes the problem as to where and which innovation can or must be employed directly in production is being solved, such a service does not exist. Thus, at the present time, with work being carried out aimed at creating rayon agroindustrial associations and reorganizing production management at the rayon level, this substantial oversight should be taken into account and corrected.

It is the obligation of each scientist, designer, inventor, each specialist and all workers attached to the agroindustrial complex to make all new and leading developments available for use during the five-year plan.

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AGRO-ECONOMICS AND ORGANIZATION

EXPANSION OF GRAIN PRODUCTION KEY TASK OF APK

Moscow PLANOVYE KHOZYAYSTVO in Russian No 11, 1982 pp 62-70

Article by I. Yakunin, chief specialist at USSR Gosplan: "Increase in Grain Resources -- A Key Task of the Agroindustrial Complex"

Text The party and Soviet State and all Soviet people have always attached and continue to attach priority importance to increasing the production of grain -- one of the chief sources for satisfying the material requirements of society.

In the food program of the USSR for the period up to 1990, emphasis is placed upon the need for accelerating and achieving a stable increase in the production of grain -- the key problem in agriculture. An increase in the production of food products and greater independence for our state will depend primarily upon solving this problem.

A task has been assigned to the agroindustrial complex: during the next few years, to satisfy the country's increasing requirements for bread and forage grain and to have the required state grain reserves and the resources for exporting it. A decisive means for achieving this goal -- achieving maximum increases in the cropping power of the grain crops, while maintaining the stability of the areas under crops and protecting all of the crops grown.

Whereas during the years of the 7th Five-Year Plan (1961-1965, which preceded the March (1965) Plenum of the CPSU Central Committee, an annual average of only 130.3 million tons of grain was produced throughout the country, following the March Plenum, which signalled a radical change towards intensive agricultural management, the cropping power of the grain crops and the production and state procurements of grain began to increase constantly, as can be seen in the data furnished in Table 1.

During the 11th Five-Year Plan, the country's grain economy will achieve higher limits in its development and perfection. Compared to the 10th Five-Year Plan, grain production (annual average) must increase by 33-38 million tons or by 16-19 percent and state procurements -- by 20 percent. A substantial change will take place in the structure of the grain procured by the state from the kolkhozes and sovkhozes. The plan calls for a considerable increase in the procurements of grain to be used for the production of groats and for feed purposes (see Table 2).

It is apparent that corn and pulse crops, for which there is an extreme need for increasing the production and improving the quality of mixed feeds, occupy a special

TABLE 1

(annual average)

	1961-1965	1966-1970	1971-1975	1976-1980	1976-1980 in % of 1961-1965
Cropping power of grain crops, quintals per hectare	10.2	13.7	14.7	16.0	157
Gross yield, millions of tons	130.3	167.6	181.6	205.0	157
State procurements, in millions of tons	51.6	66.0	67.6	77.7	151

TABLE 2

(annual average, in millions of tons)

	1976-1980		1981-1985
	Actually Procured	In % of Total Grain Procurements	in % of 1976-1980
Wheat	47.9	61.6	110
Including:			
Strong	7.3	-	103
Durum (1st grade)	0.5	-	by a factor of 4.6
Rye	3.6	4.6	169
Millet	1.1	1.4	173
Buckwheat	0.4	0.5	200
Rice	1.6	2.1	125
Corn	2.2	2.8	250
Barley	15.2	19.6	121
including brewing barley	1.6	"	144
Bean crops	1.0	1.3	240
Oats	2.8	3.6	118

place in the grain economy. Compared to the figures for the 10th Five-Year Plan, their procurement volumes must be increased by factors of 2.5 and 2.4 respectively. The procurements of durum wheat, groat crops and rye will be increased considerably for the purpose of improving the population's supply of groats, macaroni products and bread baked from rye flour.

By 1990, appreciable changes will have taken place in the grain economy: the cropping power of the grain crops will increase to 21-22 quintals per hectare and their average annual production during the 12th Five-Year Plan -- to 250-255 million tons, including in the RSFSR -- to 140-142 million tons, or 56 percent of the all-union yield; in the Ukrainian SSR -- 53-54 million tons (21 percent) and in the Kazakh SSR -- 30.5-31.5 million tons (12 percent).

For the 11th and 12th Five-Year Plans, tense tasks are to be carried out aimed at increasing the production of grain. In order for these tasks to be fulfilled, it

will be necessary to improve radically the use of the principal means of production -- land, and also the logistical resources made available to agriculture. In addition, the level of specialization and concentration in the grain economy must be raised. This is dictated by the increased requirements for grain, especially for feed purposes.

The July (1978) Plenum of the CPSU Central Committee established the task of raising the country's grain production to an average of 1 ton per capita by 1990. Per capita grain production is a most important overall criterion for both the country on the whole and for the union republics. It describes most completely the degree to which this important problem confronting the agroindustrial complex is being solved and the proportion of participation in it by each union republic.

In view of the fact that the May (1982) Plenum of the CPSU Central Committee established the task of accelerating and intensifying the production of grain, the development of the grain economy should ideally be planned and implemented at leading rates compared to the other sub-branches of agriculture. It should be viewed as being the chief element of the branch, upon which reliable support for the country in the form of food goods and agricultural raw materials, progressive structural improvements in the national economy and stable and balanced expanded reproduction are dependent. Such an approach to the grain economy is important from the standpoint that it will be distributed and based mainly on non-irrigated lands characterized by unstable and insufficient moisture.

Obviously, the redistribution of logistical and other resources in the interest of solving the grain problem must be carried out mainly in three directions:

...carrying out planned measures for improving personnel training and organizing small and stable intra-farm cost accounting collectives specializing in grain production in all of the commodity grain regions and creating conditions for them that will stimulate highly productive work, including domestic conditions that will resemble city conditions to the maximum possible degree;

...radically improving the work of reducing and eliminating grain losses both during the cultivation process and during harvesting, storage and delivery operations;

...increasing mineral fertilizer deliveries to agriculture (especially phosphorus fertilizers), mainly by annual increases.

In this regard, it bears mentioning that the country's average indicator for applying mineral fertilizers per hectare of grain sowing (excluding corn) changed only negligibly during the 1976-1981 period -- from 47 to 51 kg of nutrients. In Kazakhstan it has remained stable for 5 years (in 1977 -- 8 kg per hectare and in 1981 -- 10) and in the Ukraine it even decreased from 81 kg per hectare in 1978 to 76 in 1981. Grain losses are great during its cultivation, harvesting, transporting, processing, storage and sale. These losses increase sharply during years in which raised yields are obtained, at which times the weather conditions favor growth in the grain crops but considerable moisture during the harvesting period hampers the harvesting of the crop.

Under these conditions, a special role must be played in the agroindustrial complex by the accelerated creation of highly reliable and highly productive grain

harvesting equipment (combines, self-propelled harvesters, specialized transport and other items of equipment) that will be capable of harvesting the grain crops during all types of weather or almost all types.

In addition, importance is being attached to measures aimed at constructing elevators close to the production areas for commodity grain (both for USSR Minzag /Ministry of Procurements/ and or a cooperative basis for kolkhozes and sovkhozes with USSR Minzag), with a network of roads, and also the creation of drying capabilities and more extensive use of preservatives for protecting freshly harvested grain of a raised moisture content.

The combining of grain drying, as necessary during the various stages in its passage from the fields to the granaries, with the preservation of freshly harvested damp grain during the initial hours of harvesting will make it possible to utilize the drying capabilities more effectively, to reduce sharply or prevent grain losses and to retain its quality.

During this present stage in the development of the agroindustrial complex, in addition to cropping power, gross yield and grain production per capita, greater importance will be attached to other criteria for grain economy results, including the obtaining of grain per hectare of crop rotation plan space and per individual machine operator of an intra-farm subunit.

The indicator for grain production (yield) per hectare of crop rotation plan space is a criterion for management of the grain economy. It is important both from the standpoint of selecting the type of crop rotation plan, solving the problems concerned with the creation of an intra-farm specialized production subunit and eliminating a lack of responsibility in the use of the principal means of production -- land, and also for subsequently evaluating the effectiveness of use of all factors associated with intensification of the grain economy.

Thus, as a result of studies carried out over a period of many years (1968-1980) at the VNIIZhKh /All-Union Scientific-Research Institute of Grain Farming, the largest average annual grain yield (13.7 quintals) per unit of crop rotation plan space was obtained from a four-field crop rotation having two fields of wheat, one field of barley and one field of clean fallow. Moreover, the proportion of clean fallow in the crop rotation plan area was 25 percent. Other types of crop rotation plans, involving a greater or less degree of saturation by clean fallow or a complete absence of it, produced worse results.

In Stavropol Kray, at the Prikumskaya Plant Breeding-Experimental Station, a test of six types of field crop rotation plans (1970-1975) involving different proportions of grain crops and clean fallow revealed that the largest grain yield -- 17.8 quintals per hectare of crop rotation plan area -- was obtained from a two-field crop rotation plan (fallow -- winter wheat).

According to data supplied by the Siberian Scientific-Research Institute of Agriculture, the highest grain yield per hectare of arable land was obtained from specialized crop rotation plans where clean fallow occupied 20-33 percent of the crop rotation plan area and grain crops -- 67-80 percent (see Table 3).

Even in the case of crop rotation plans characterized by a high cropping power for the grain crops (18.1 quintals per hectare), the grain yield per unit of crop rotation

plan area was less than that for crop rotation plans having a lower cropping power but a greater saturation of grain crops.

TABLE 3

(1971-1975, annual average)

In Crop Rotation Plan, %	Grain Crops	Cropping Power of Grain Crops, in quintals per hectare	Grain Yield Per Hectare of Arable Land, Less Seed, in quintals
Clean Fallow	Grain Crops		
33.0	67.0	17.8	11.2
25.0	75.0	16.8	11.8
25.0	50.0	18.1	8.5
20.0	60.0	16.9	9.4
20.0	80.0	15.3	11.3
16.7	66.6	15.8	9.8
0.0	100.0	10.8	9.7

As is apparent, the grain yield per hectare of crop rotation plan area is a chief indicator when selecting a crop rotation plan and this in the final analysis is very important for developing the country's grain economy and for guaranteeing an increase in the production of grain.

In Omsk Oblast, for example, the area used for grain crops during the 1976-1980 period decreased by 309,000 hectares or 13 percent compared to the 1961-1965 period, whereas the clean fallow area increased from 144,000 to 587,000 hectares -- or by a factor of 4. Moreover, the overall area for grain crops and clean fallow during these years increased from 2.89 to 2.96 million hectares (by 3 percent) and the proportion of clean fallow -- from 5 to 20 percent. Under such conditions, the production of grain per hectare of grain crop sowing and clean fallow increased from 629 to 1,206 kg or by 92 percent.

Science and practical experience have proven that noticeable success will not be achieved in increasing the production of high quality grain in the absence of an adequate amount of clean fallow, especially in zones of unstable moisture conditions. In addition to other intensification factors, clean fallow represents an important means for raising cropping power and achieving the potential of new grain crop varieties.

Clean fallow performs an active role as an accumulator of moisture and nutrients, it makes it possible to utilize in a more productive manner the moisture and nutrient reserves for the formation of grain yields, it promotes a savings in seed, it cleanses the soil of weeds, pests and diseases, it reduces the requirements for costly equipment and manpower and thus it is becoming an irreplaceable factor for intensification and an important means for raising labor productivity. Special attention must be given at the kolkhozes and sovkhozes to the timely plowing up of the clean fallow and fulfilling the requirements for tilling the fallow.

The grain production indicator per machine operator of an intra-farm subunit is required mainly for the large grain production farms, where the crop rotation plans

are assigned to primary production subunits which are comparatively small in terms of the number of machine operators. In such labor collectives which operate on a cost accounting basis, operational independence and long range interest in raising labor productivity are created, the use of scientific achievements and leading experience is accelerated, the quality of the products is improved and lack of responsibility for the land and other principal means of production is eliminated. As a rule, the organization of labor in such collectives is on a non-schedule basis and wages -- job contract plus bonus.

During the course of an experiment conducted over a period of many years at an experimental farm of VNIIZKh, in Brigade No. 6, which consists of six machine operators and which specializes in the production of high quality wheat, the following results were obtained (see Table 4).

TABLE 4

Indicator	Average for 1971-1975	
	Experimental Farm of VNIIZKh (less Brigade No. 6)	Brigade No. 6
Grain sowing area, in hectares	25,410	3,627
Use of arable land for grain crops, %	53.9	70.0*
Number of machine operators	132	6
Workload per machine operator, hectares of arable land	357	863
Grain crop cropping power, quintals per hectare	16.4	17.9
Production cost per quintal of grain, rubles	5.36	3.67
Labor expenditures for production of 1 quintal of grain, minutes	33.7	16.4
Grain produced by 1 machine operator, tons	316	1026
Cost of grain produced by 1 machine operator, according to 1965 state procurement prices, rubles	20,546	66,716

* 30 percent of arable land occupied by clean fallow.

It bears mentioning that prior to 1967 there were 24 tractors of various types in the brigade and following their replacement by K-700 tractors -- only six remained.

In addition, the experiment established the fact that each K-700 tractor which replaced a less productive one also released no less than 2-3 machine operators for other work. If one bears in mind that there are two family members for every machine operator in the virgin land regions and that the capital investments for each individual residing in the area of the experiment amounted to 3,300 rubles, then it would appear that each K-700 tractor produced a savings in capital investments of not less than 20,000 rubles.

At the Sovkhoz imeni Chekhov in Uritskiy Rayon in Kustanay Oblast, a team headed by USSR State Prize laureate V. Yermakov, consisting of seven machine operators including the team leader, achieved considerable successes in the production of grain.

The non-schedule collective of the team, which operated on the basis of a job contract plus bonus wage system, was assigned a six-field crop rotation plan (2,817 hectares) and over a period of 4 years (1977-1980) it produced approximately 17,000 tons of grain for an average annual cropping power of 19 quintals per hectare and this meant that each machine operator cultivated and harvested an average of 600 tons of grain annually. The production cost per quintal of grain was 4 rubles and 58 kopecks, whereas for the sovkhoz it was 1 ruble and 60 kopecks higher and the cropping power of the grain crops almost 3 quintals per hectare less.

Positive operational experience by mechanized teams operating on the basis of the job contract plus bonus wage system and temporary advances has been accumulated on a number of farms in Kletskiy Rayon in Volgograd Oblast and is reflected in Table 5.

TABLE 5

Indicator	1965	1970	1973
Number of mechanized teams	1	28	65
Average number of machine operators in one team	10	3.5	4
Arable land assigned to teams, hectares	2653	42012	98963
Cropping power of grain crops, quintals per hectare:			
For teams	10.8	18.2	24.7
For brigades, less teams	9.4	16.6	21.2
Grain obtained per individual machine operator, in tons			
For teams	235	578	636
For brigades, less teams	150	205	233

In Kletskiy Rayon in Volgograd Oblast, mechanized teams produced almost 3 times more grain per machine operator than did brigades without teams. Positive experience was also accumulated in organizing the production of grain in the nonchernozem zone, which has its own specific conditions for farm management. Thus, at the Moscow Leont'yevskiy Sovkhoz, a team consisting of four individuals operating on the basis of the non-schedule system and a complete crop rotation plan, achieved high yields. The team produced more than 450 tons of grain for each machine operator and the expenses for 1 quintal of output did not exceed 15 minutes; even during years marked by poor weather conditions, the team's grain crop cropping power exceeded the average for the sovkhoz by 4-5 quintals.

Based upon the mentioned VNIIZKh experiment and the operational experience of farms in Kletskiy Rayon and many other intra-farm subunits and kolkhozes and sovkhozes throughout the country, the work of machine operators involving the use of specialized grain crop rotation plans should ideally be organized mainly in the commodity grain regions. Such crop rotation plans must be developed by the scientific-research institutes and studied together with those specialized feed

crop rotation plans providing the highest yields in high quality feeds (in feed units) and digestible protein (per feed unit), with minimal expenditures for their production.

In order to accelerate the obtaining of high grain yields with minimal expenditures for its production, the planned organization of cost accounting primary production subunits should ideally be carried out. Each machine operator in these subunits must strive to obtain 500-500 or more tons of grain. Experience which has been accumulated in this regard and the availability at the kolkhozes and sovkhozes of the required logistical base serve to confirm the fact that this is a workable task. Under these conditions, the problem of harvesting the grain crops must be solved in a more rational and effective manner. Towards this end, additional machine operators -- combine operators and drivers of motor vehicles and other transport equipment -- will be required for the harvest period. With the development of different subsidiary enterprises at the kolkhozes and sovkhozes and also enterprises which operate on the basis of cooperation with industry, a permanent reserve of manpower will appear which will be available for use during especially tense periods of work (sowing and especially harvesting of the crops).

At the same time, a need has developed for evaluating the crop rotation plans and the operational results of brigades, teams, kolkhozes, sovkhozes, rayons and their specialists, using the indicator for grain production with a deduction for seed sown. Actually, a considerable increase has taken place in recent years in the expenditure of grain for seed purposes. This is associated to a large degree with winter crop losses and the resowing of large areas. Moreover, the final sowing area for spring grain crops, compared to the initial area, turns out to be less for various reasons, as a result of which the sown seed and other expenditures must be regarded as losses which in the majority of instances cannot be made up.

Analysis has shown that crop losses are mainly associated with the non-fulfillment of agrotechnical measures and ignoring scientific achievements and leading experience. Under these conditions, the above-mentioned indicator for the operational results of brigades, teams, kolkhozes, sovkhozes and rayons will promote the finding of more effective means for managing the grain economy and increasing the production of grain.

Many kolkhozes and sovkhozes have converted over to sowing seed of the 1st and 2d classes of the sowing standard and some are sowing only 1st class seed. This is making it possible not only to economize in the use of large quantities of costly seed but in addition it is also serving to raise the cropping power substantially. Even in the case of 2d class seed, a germinative capacity of not less than 85-95 percent is tolerated for the grain and pulse crops and this means that more than 3 million tons of grain in the form of seed will be sown to no avail and in the absence of the required return. If one also takes into account the fact that the field germinative capacity of 2d class seed is lower than 1st class, that the possible tolerance for weed seed in 2d class grain crop seed ranges from 25 to 50 units per kg of the principal crop and that the waste products from the principal crop and impurities amount to 1.5-2 percent, then it is apparent that the grain losses will be considerably greater.

In addition, the kolkhozes and sovkhozes will sustain considerable losses by sowing large quantities of second generation hybrid corn seed, rather than the more

productive first generation seed, and also seed for non-regionalized varieties and low quality varieties.

Thus the rapid conversion over at each kolkhoz and sovkhoz to sowing seed that is no lower than 1st class of the sowing standard, hybrid corn seed of the 1st generation only, high grade seed and regionalized varieties will make it possible to reduce grain losses sharply and increase the grain resources.

At the same time, a rapid conversion should be made over to accounting for and planning the production of grain according to bulk, following processing (granary bulk) with the rejection of accounting and planning based upon the initial credited bulk (hopper). This will make it possible, on an annual basis, to take into account, distribute and compare the true grain resources and also to take into account and compare the true cropping power of the grain crops. The need for introducing such a system is dictated by the fact that from one five-year period to another, in all of the union republics, an increase is taking place not only in the absolute quantities of unused waste products and losses but also in their proportion with regard to the gross yield of grain and this is distorting the accounting and reporting for one of the most important summary indicators.

The strong dependence of the grain economy upon weather conditions and, as a result of this, the considerable fluctuations in the grain crop cropping power and in the gross yields and state procurements of grain, must be taken into account in the plans and economic activities.

The data furnished in Table 6 furnishes some idea as to the extent of the fluctuations in grain production throughout the country.

TABLE 6

Five-Year Plan	Grain Production, millions of tons			Amplitude of Fluctuations	
	Annual Average	Maximum	Minimum	Difference Between Max. & Min. Production, millions of tons	In % of Average Annual Volume
Seventh (1961-1965)	130.3	152.1	107.5	44.6	34.2
Eighth (1966-1970)	167.6	186.8	147.9	38.9	23.2
Ninth (1971-1975)	181.6	222.5	140.1	82.4	45.4
Tenth (1976-1980)	205.0	237.4	179.3	58.1	28.3

Is it possible that the fluctuations in grain yield can be averted in the future? Certainly not, since it reflects a characteristic feature of our climate. Thus the forecasting of the cropping power of grain crops and the production and state procurements of grain, as a scientific-analytical stage of planning, must become a mandatory component part of the pre-planning and planning periods at all levels of agricultural administration. Only at this stage will it be possible to detect regularities in a change in cropping power, evaluate them correctly and undertake corrective measures.

V.I. Lenin emphasized that knowledge of the objective economic laws and their conscious use is realized "not in the sense of only one explanation of the past, but rather in the sense of unflinching foresight of the future and bold practical activity aimed at carrying it out."^{*}

Data on the regularities in fluctuations in grain crop cropping power convince one regarding the need for computations for a plan and also for taking into account in the plan, based upon a forecast, the quantitative and qualitative characteristics of objective processes (uncontrolled weather factors), with use being made of this data when developing and implementing measures for increasing the production of grain and other agricultural products.

In critically examining the fluctuations in cropping power and grain production in past years and based upon such possible fluctuations in the future, it is obvious that two computations should ideally be carried out -- current and long term -- with the work based upon the minimum resources available to the country. This will make it possible to guarantee support for the country in the form of grain and other products.

It is always easier to overcome the consequences of a crop failure if grain reserves were created, a point which was emphasized once again during the May (1982) Plenum of the CPSU Central Committee.

The creation and accumulation of reserves at kolkhozes and sovkhozes must take place during years when the gross yield of grain crops exceeds the planned yield. As a rule, years characterized by a sharp drop in cropping power are preceded and followed by years having a higher cropping power. In Stavropol Kray, for example, the cropping power of the grain crops in 1968 was 14.7 quintals per hectare, in 1969 -- 9.1 and in 1970 -- 19.9 quintals per hectare. In this same kray, in 1978, the cropping power was 25.6 quintals per hectare, in 1979 it fell sharply to 10.7 quintals per hectare and in 1980 it increased to 22.3 quintals per hectare. The creation and use of grain reserves at kolkhozes and sovkhozes requires the introduction of reporting based upon this indicator by the TsSU /Central Statistical Administration/.

More than 800 types of bread and baking products are being produced in our country. Approximately 35 million tons of bread alone are being baked. A wide assortment of groats, macaroni, confectionery and other items being produced by industry is being made available to the population.

Whereas in 1965 the per capita consumption of bread products (bread and macaroni items in a conversion for flour, groats, beans) was 156 kg, in 1980 it was 139 kg or 11 percent less. But during these years the population increased from 232.2 to 266.6 million persons, that is, by almost 15 percent. Thus the overall quantity of flour, groats and other baked products consumed in the country increased rather than decreased.

In the future, as increases take place in the production and state procurements of animal husbandry products, vegetables, fruit and other agricultural products, the consumption of baked goods will decrease and reach a rational norm -- 110 kg per capita. However, bread will always be the first and chief product.

* V.I. Lenin. Complete Works, Vol. 26, p 75.

The carrying out of the tasks assigned by the 26th CPSU Congress and the May (1962) Plenum of the CPSU Central Committee in connection with the grain economy requires tense and creative work by millions of Soviet people and particularly by those working in the agricindustrial complex.

Their work, directed towards increasing the production of grain and harvesting, processing, transporting, storing and selling the grain products, represents an important contribution being made towards raising the level of national welfare.

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AGRO-ECONOMICS AND ORGANIZATION

OFFICIAL INTERVIEWED ON RAPO FUNCTIONS

Kiev STI'S'KI VISTI in Ukrainian 12 Jan 85 pp 2-3

Interview with V.S. Prosin, chairman, main committee, USSR Ministry of Agriculture by O. Dronov; date and place not specified

Text The country's provisions program is planned for more than one year, however, its fulfilment, as was stressed at the November (1982) CC CPSU Plenum, cannot be delayed. A primary task is an improvement in the economic mechanism, a system for managing agriculture and the whole agro-industrial complex. What has been done so far, which experience is being utilized and what are the problems? These issues were discussed by PRAVDA press office correspondent and the chairman, Main Committee, USSR Ministry of Agriculture, V.S. Prosin.

Question In the many-sided work of realizing the provisions program special attention is given today to the rayon economics team. Some experience has already been acquired from rayon agro-industrial (RAPO) associations active in a number of republics for several years. What are some of the interesting aspects of this experiment?

Answer First of all, it is the conditions which develop in associations actively promoting an increase in agricultural production intensity, strengthening independence, encouraging kolkhoz, sovkhoz and other agro-industrial team initiative, directing them not towards intermediate, as before, but towards final results.

Question Why is this re-orientation important?

Answer In recent years wide scale specialization and production concentration has been taking place in rural areas. It is an important and essential process. But many specialized enterprises whose direct responsibility it was to service kolkhozes and sovkhozes began little by little to work more for themselves, taking care of departmental interests first.

For example, quite a few local enterprises of "Verzinkomcisl'hosp-tehnika" [state committee of agricultural technology], "SIL'hosp-nimiya" [agricultural chemistry], organizations of reclamation, construction, procurement and raw material processing workers often are more concerned with obtaining a greater income than with harvest or milk or weight gains.

Question In other words, the chief factors in agricultural intensification -- complex mechanization, reclamation and chemization appear, in this instance, to be insufficiently tied in to final work results in field and farm?

Answer That is true. Such shortcomings have to be removed by AILO.

We know that the experiments began in Abasha, Vil'yandi and Talsy. Today agro-industrial associations exist in all rayons of Georgia, Estonia and Latvia. They unite kolkhozes and sovkhozes, interfarm and other enterprises of the agricultural and fruit farming ministries, subsections of state agricultural technology committee, agricultural chemistry, interkolkhoz construction, bread product factories, mixed feed and dairy and meat combines. All of them retain their economic independence, individual judicial rights and their departmental assignment. But all of them have the same goal -- to raise agricultural production effectiveness, to obtain the most high quality production from fields and farms.

AILO is directed by a council. It consists of managers from all farms and enterprises. The council determines where primary efforts and funds are to be directed. Since the council is an organ of state administration, its decisions are mandatory for all association subsections.

Question There are actually no economic levers in the existing rayon agricultural administrations. Are there any in RAPO?

Answer Yes, first of all there are centralized funds for production development, material encouragement, social-cultural measures and housing construction. The order for fund establishment, proposed by scientists and practitioners in Estonia, is rather interesting. Both in Vil'yandi and Pyarnu funds are established on the basis of a farming level coefficient. Briefly, an index was introduced for kolkhozes and sovkhozes which are in similar soil-climatic zones. This index takes into account soil fertility, material and work resources, etc. Farms with better conditions contribute a larger portion to the fund, those with poorer resources a smaller portion.

Question Does this order affect the interests of leaders? Does it not favor those who are behind?

Answer In the Vil'yandi RAPO, for example, a differentiated farm income deduction was set up for the centralized funds amounting to

6 to 21 rubles per hectare of arable land. Obtaining more resources, leading farms return a considerable amount of income and also keep some of the additional income. Some other farms contribute to centralized RAPO funds several times less than the leaders.

When the farming level coefficient was determined in Estonia and was compared to old indices, it was discovered that some kolkhozes and sovkhozes, which were thought to be leaders, work less intensively than those which have poorer soil and facilities and fewer people. These farms with their present insufficient revolving funds receive money from the Pyarnu RAPO reserve funds. Improvements are quite noticeable: the rate of production increase in all types of output is considerably higher in lagging farms than in leading farms.

Question 7 It is quite obvious that the association is convenient for kolkhozes and sovkhozes. However, as before, there is some irregularity in the relationships between partners. Therefore, the situation in each rayon may be compared to the famous fable about the swan, lobster and pike...

Answer 7 I agree. Many enterprises and organizations, which should be primarily servicing agriculture, have shown no economic interest in this so far. The situation is changed by the typical regulation on rayon agro-industrial association recently approved.

RAPO will determine the basic work volume indices which will be fulfilled for kolkhozes and sovkhozes by state committees on agricultural technology and agricultural chemistry enterprises and also by reclamation and construction workers and other servicing organizations. The rayon agro-industrial association will also work out and approve rates and tariffs for services provided, based on norms, re-distributing, when necessary, 10-15 percent of material-technical resources provided between association members. RAPO will also determine conditions for premiums for leading workers and specialists in all subsections regardless of their department.

Question 7 Preparation work for the establishment of agro-industrial associations is now going on locally and the following thoughts may be heard: First of all, we'll establish RAPO, and later we'll begin acting jointly.

Answer 7 That is an incorrect thought! We must work side by side already now. An example is provided by leading collectives which initiated the all-union competition under the slogan: "livestock raising - a shock worker front!" Farm wintering, increasing livestock productivity, fulfillment of obligations in animal production sale to the state -- all of these are not only rural worker cares, but concern also workers in food, meat and dairy, mixed feed and microbiological industry and enterprises in state agricultural technology committee. Support should also be given to Lutonian, Ilyanck, Poltava and Tashkent area machine operators who spoke out for exemplary technology preparation for the spring.

Question 7 Of course, while solving primary tasks we must also think of up-coming problems. The XI Georgian Communist Party recently approved the Gardabani Rayon provisions program. The value and novelty in the Gardabani experience lies in the fact that marked field and farm output production increase will be achieved here through an intensive development of all branches.

Answer 7 Yes, this is indeed a valuable experience. Basically, the Garbauanskiy Rayon provisions program is at the same time a program of wide application of scientific achievements and leading experience, an improvement in Rayon organizational structure and its administration as a single complex. This large-scale program was put together by the rayon party committee along with Georgian SSSR State Committee on Science and Technology, republican ministries of agriculture, land reclamation and water farming, state agricultural technology committee, main Georgian water, construction and other departments and scientific institutions. This approach yields success in the struggle for high effectiveness and quality.

Question 7 The most important thing is probably that experienced people got involved...

Answer 7 Yes, All leadership has been reinforced by highly qualified personnel, who went through good schooling in party, soviet and farm work including republican organs.

Question 7 Today the basic team is the rayon economic team. But, according to specialists, not all problems can be solved here. Optimal combination of territorial and branch administration principles, improved planning and material technical equipment will probably have to be assured on a higher level.

Answer 7 A lot in A 's activities will be dependent on oblast level administration. The administration structure here is very cumbersome and complex and quite disconnected. Dozens of organizations and services affect agricultural management in oblast centers.

We know what this leads to. The rural material-technical basis is parcelled out. Administrative rayons, where decisions are made on plans, obtain resources by bits through dozens of channels. Each organization creates its own production, servicing, construction and other subdivisions. Such administrative disunity became a serious obstacle on the road of a progressive process of interfarm cooperation and agro-industrial integration, a complex social-economic rayon development.

Question 7 Yet, that is only one side of the matter. The other, no less disturbing, is a massive pulling away of qualified personnel from production.

Answer 7 Yes. We can name quite a few oblasts where two to three thousand engineers, mechanics and veterinarians, or a fourth of

rural specialists, are occupied in various offices.

This pulling away of specialists from production is, by itself, a deterrent in solving economic problems. The situation also becomes more complicated because the administrative apparatus is decentralized; basic technological services are not powerful enough. For example, the Rostov area oblast agricultural organizations employ 141 zoo-technicians. In the oblast agricultural administration, whose farms provide the basic mass of livestock production, there are only 12 zoo-technicians.

The establishment of rayon and also oblast and nation-wide agro-industrial associations will promote complex and goal-directed management, increase agricultural productivity, preventing losses and assuring safety in agricultural production in all its stages of production, procurement, transport, processing, preservation and realization. All of the above will also promote putting into effect the decisions of the 26th CPSU Congress, the May and November (1982) CC CPSU Plenum.

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AGRO-ECONOMICS AND ORGANIZATION

MEASURES ASKED TO STRENGTHEN RAPO PROFITABILITY

Moscow EKONOMICHESKAYA GAZETA in Russian No 3, Jan 83 p 16

[Article by Z. Konfederatov, chief economist, Tambovskiy Rayon Agro-Industrial Combine, Amur Oblast]

[Text] RAPO Specialists Analyze Farm Productive Activity

The rural workers of Tambovskiy Rayon, Amur Oblast, have concluded the agricultural year with excellent indicators. The state plans for the sale of agricultural product were over-fulfilled. Over 77,000 tons of grain were sold. The kolkhozes and sovkhozes have coped with the tasks on milk and meat sales.

The total production of agriculture and animal husbandry amounted to about 50 million rubles, which is 10 percent above the average level for the 10th Five-Year Plan. According to preliminary data, the total profit will be about a million rubles.

In What Consists the Secret of Profitability?

Not long ago a rayon agro-industrial combine was created in our oblast. It included all the kolkhozes and sovkhozes of the rayon, and the enterprises and organizations servicing them. Of course, this was only the first step on the path of a new form of administration of a rayon agro-industrial complex. In the future, large and complex work has to be done in connection with adjustment of the interrelations of all members of the agro-industrial complex on the level of the rayon.

I would like to especially emphasize, however, that successes in the production of agricultural production will depend to a great extent on the work of the kolkhozes and sovkhozes, on their ability to run a farm zealously, their creative initiative and enterprising character. Does everything stand with us in this respect as you would like?

The state renders much help to the kolkhozes and sovkhozes in the development of their farms. Deliveries of equipment, fertilizers and other chemicals are increasing. The procurement prices for sold production are being increased, and payments for labor are rising. However, all the measures are not always used effectively. At a number of farms a tendency is observed toward a reduction of profitability of both individual branches and of the entire agricultural production.

Thus, on the whole for the rayon the profitability of production amounts to about 19 percent. And now that indicator is comparable at two kolkhozes--"Amurskiy partizan" ("Amur Partisan") and "Put' k kommunizmu" ("Path to Communism"). In the former, profitability attains almost 29 percent, and in the latter, a little more than 9 percent. What explanation is there for such a difference?

In the kolkhoz "Amur Partisan" the economics work has been well organized. And that has been positively reflected on all the indicators. Khozraschet tasks are simultaneously brought to each enterprise. The results of their fulfillment are submitted to a joint session of the kolkhoz management and the bureau of economic analysis. A single day of Khozraschet is installed at a farm. Each specialist and leader constantly compares the planning and actual expenditures of labor and material resources on the performance of work and follows it in order that there not be overexpenditures. The accounting department organizes all this work in accordance with the requirements of Khozraschet. Therefore it always is possible to know the state of affairs in the subdivision.

Improvement of production, the persistent introduction of the achievements of science and leading experience and a strict regime of economy--all this contributes to improvement of the profitability of branches of the economy. Whereas on the average for 1976-1980 the net profit of a farm was 775,000 rubles, in 1982 it is 954,000.

If the Role of Khozraschet Is Reduced

Now let us take the farm "Path to Communism." It has almost the same technical base and provisioning with fixed assets as the kolkhoz "Amur Partisan." However, the results of the farming differ sharply. On kolkhoz "Amur Partisan" on 100 hectares of agricultural land a total production valued at 25,500 rubles is produced, and on Kolkhoz "Path to Communism", at 21,600 rubles. The production of gross product on that farm has been reduced by 8 percent as compared with the level of the 10th Five-Year Plan, and at the kolkhoz "Amur Partisan" it has grown by 18 percent.

Soya occupies a large share in the total production of the farm. While it has identical soil quality ratings, the kolkhoz "Path to Communism" gathers 2.5-3 cwt less per hectare than the kolkhoz "Amur Partisan".

A number of factors can be cited which stipulate the final results. But one of them, in my view, is the most important--it is the low level of the economic work. At the kolkhoz "Path to Communism" the role of material and moral incentive for timely and qualitative performance of work has been lowered. Khozraschet at that farm has not become the main method of organization in carrying out production. Of course, there are reflections of incorrect interrelations with other enterprises and organizations, mainly in technical and transport servicing and the carrying out of construction and mechanization of production processes. Systematic miscalculations, additions to the work volumes and lack of control increase the expenditures on production. We hope the creation of RAPO's will permit regulating these interrelations and be positively reflected in the financial results of kolkhozes and sovkhozes. And we, the combine workers, must help the farms and organize economic work and at the same time renounce excessive custodianship over it.

Having discussed the decisions of the May 1982 Plenum of the CPSU Central Committee, the communists of kolkhoz "Path to Communism" designated a number of measures to elevate the economy of the farm. Thus provision was made for introduction of a zonal system of agriculture and giving more attention to perennial grasses, which will contribute to the creation of a strong fodder base and increase of the yield of grain crops and soya.

No small role has been given to improving the organization of labor and administration in the kolkhoz. In particular, it has been decided to change to a collective contract, which will permit widely using wages as the final results of labor. It is

planned to organize dispatcher service and change to the new structure of production organization

All this, in our view, will contribute to increase of production and of the efficiency of branches of the economy. Such are real possibilities of a low-profit economy which can be realized in the next few years. It is thought that under the conditions of a rayon agro-industrial combine regular economic analysis of the production activity of all RAPO members is one of the main forms of our work. For the analysis will contribute to the disclosure of bottlenecks and unused reserves. The possibility is revealed of simultaneously taking the necessary measures directed toward strengthening the economies of kolkhozes, sovkhozes and other combine subdivisions.

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AGRO-ECONOMICS AND ORGANIZATION

ESTONIAN RAPO ADMINISTRATIVE PROBLEMS INDICATED

Moscow SEL'SKOYE KHOZYAYSTVO ROSSII in Russian No 12, Dec 82 pp 30-32

Article by B. Rusakov: "Rayon Agroindustrial Association"

Text "And there is the agronomist!" the young driver sighed hopelessly and, responding to the signal by the individual at the side of the road, brought his truck to a halt.

"Hello, Uncle Arno!"

The youth spoke first, attempting to strike an air of independence, but he encountered a stern glance by the agronomist and thereafter he guiltily lowered his eyes.

"How could you? Indeed, I recal how as a schoolboy you romped over the fields. And now you move wheels over them. Turn your machine around! Here, I have a shovel in my hands and I can correct the situation myself."

The roads at the Pyarnu Edazi Kolkhoz are not very wide. But not one driver crosses a field. They are aware that the chief agronomist, Arno Erm, will find the violator and shame him such that his ears will burn like those of a youngster.

The people maintain that he keeps a close eye on each kernel of grain.

For Erm, there are no matters of secondary importance. He gives himself to his work without letup and he expects others to do the same. The entire district is familiar with the two "indomitable" ones at the Edazi Kolkhoz, the agronomist and the chairman, Vello Prins. Is it not because of them that the fields have become more fertile with each passing year? They have obtained 50 quintals of grain per hectare and from the agronomist's cherished field -- 76 quintals per hectare.

It was by no means an accident that this kolkhoz was entrusted with the responsible work of producing elite and super stock seed for farms throughout the region. Together they built granaries for 6,000 tons and today they are supplying the sowing machines with select grain from these facilities. The neighbors are satisfied and the kolkhoz is not hurting -- it is receiving good prices for its products.

Such a merging of interests is not a rarity in Estonia. Seven years ago the country's first RAPO Rayon agroindustrial association was organized and today there are

RAPO's operating in all of the republic's regions. This has been accomplished mainly so that the economic initiative of Prins, Erm and thousands of others who skilfully manage their land will not be dissipated by interdepartmental barriers but rather will find use out on the fields and farms.

The Voice of One Man Is the Voice of No One

And are these reorganizations necessary? The old system of administration has existed for many years. It is only necessary to increase the capital investments and economic growth will be ensured. Is this not so?

This is not so. The socialist economy is developing rapidly. And the old forms for organizing production are restricting it and not allowing it to unfold to the fullest extent. New "adornments" should be employed in the interest of accelerating development.

With regard to capital investments, the supplying of money to a poor manager is equivalent to casting it to the winds. Valter Udam, one of the creators of RAPO, stated: "We can provide a backward farm with a pedigree herd, but if improvements are not carried out in management this herd will show up at a meat combine within a matter of several years."

The RAPO principle is not a new one -- the voice of one man is the voice of no one. It is difficult today to realize progress in the absence of mutual assistance. The problem is one of how best to achieve cooperation among the farms.

The branch method is a familiar one to industry. Branch associations have been created even in agriculture. They have proved their worth from a production standpoint. But they have a vulnerable area.

In each region there are several associations in operation, with territorially isolated farms being included in their structures. A region, its all-round development -- too many cooks and so forth. The program for social changes suffered in particular. As a result -- personnel turnover and shortages.

A completely different picture appears if we view the agriculture of a region as a single whole. Among kolkhozes and sovkhozes the common means of production is the land. They are associated with the same processing enterprises and service organizations and they are interested in social development.

When the thought arose of merging the two forms of ownership on the basis of their common interests and associating the region's enterprises economically and organizationally with the farms -- this was the beginning of the RAPO's.

In Vilyandi, where the first RAPO in the republic was created, 15 kolkhozes, 11 sovkhozes and goskhozes, Mezhkolkhozstroy, raysel'khoztekhnika, a meat combine and combines for grain and dairy products were all merged together. In the Pyarnu RAPO, the structure of the association is more substantial. In addition to 15 kolkhozes and 15 sovkhozes, there are also 13 enterprises and organizations. Among them there are forestry farms which cooperate with farms having tracts of forest land, a fishing kolkhoz and a wild-animal rearing farm. Consumer societies provide services for the members of the association and are included in its structure.

In short, the structure of the RAPO is not a constant factor. There is room in the association for any enterprise associated with agriculture.

The association and each enterprise operate on a complete cost accounting basis. Its principal tasks are formulated in the regulations. Included among them are -- fulfillment of the state plans, increasing production and raising its efficiency, optimum utilization of resources, scientific achievements and leading experience, coordination of the activities of members of the association, development of specialization and cooperation and protection of the environment. A great amount of attention is being given to developing the socialist competition and improving the working and living conditions of the workers.

Extensive use is being made of the contractual system in the interrelationships of farms. For example, the relationships with industrial enterprises with regard to the construction of inter-farm enterprises.

True, a contract does not always accurately define the contribution made by a participant to the overall task. For example, it may turn out that Sel'khoztekhnika realizes a profit while a kolkhoz suffers a loss.

In Order For a Quorum To Assemble

Upon entering a RAPO /rayon agroindustrial association/, each enterprise retains its legal independence. Which organ is considered competent for bearing responsibility for the fate of an association and for the region's agricultural economy? The RAPO council is such an organ. It consists of representatives of all members of the association and the leaders of the party, soviet and professional trade union organs in the region, in all 40-60 individuals.

Important problems concerned with the work of the association are discussed during meetings of the council. For example, the acceptance of new members, approval of the plans for production distribution, specialization, cooperation and agroindustrial integration and the creation of specialized production and service units. Based upon indicators approved for the association, the council issues planning tasks to its subordinate enterprises. The plans for enterprises of dual subordination are only coordinated with the council.

Approval of the norms for deductions into the centralized funds, the distribution of resources among the farms and the establishment of accounting prices, norms and normatives used within the association are all included within the competence of the council.

There are many basic problems for which collective solutions are required. However, experience has shown that it is sufficient for the council to convene once or twice each quarter. In extreme cases, the council can be convened upon a demand by one third of its members. And the daily work is directed by the chairman of the RAPO, who is elected during a council meeting from among candidates recommended by the republic's Ministry of Agriculture and the administrative organization, which is maintained by the resources of the members of the association.

The chairman of the association represents its interests in all of the state organs, he performs in its behalf, he concludes agreements, issues powers of attorney and

opens up a bank account. He is the 1st deputy chairman of the rayon executive committee and he is granted administrative rights: he can change the order issued by the leader of any organization which is a member of the RAPO, if in his opinion it is in conflict with the association's regulations or existing legislation.

As a rule, specific decisions are handed down for all problems discussed by the council. Indeed all of the members of the association have common goals and this serves to guarantee successful operations.

The members of the council undergo psychological training by taking courses at the agricultural academy. This aids them in obtaining a better understanding of one another, especially in conflicting situations. Following one meeting, the director of a dairy plant stated in a surprised manner: "How could it be that I never took note of the kolkhoz problems earlier? I only criticized them and now I am giving thought as to how best to aid them."

Not all of the problems that arise on the farms are of importance to the region as a whole. In those areas where the local peculiarities must be taken into account, the regional councils cope very well with the work. A region or production zone includes 3-5 neighboring farms. They have the same managerial conditions and a common social base.

The regional council is a diminutive copy of the RAPO council. Its chairman is a leader of one of the farms. The tasks of the council -- coordinate production activities and solve local problems.

In the Kilingi-Nymme region, the Tali Sovkhoz is the weakest farm. Here there is very little reclaimed land and not enough housing is being built. The regional council discussed the situation. The decision was made for assistance to be provided in the form of local resources. The Tikhemetsaskiy Sovkhoz-Technical School -- equipment and manpower and the Kilingi-Nymme Forestry Farm sent tractor operators to the Tali Sovkhoz. With assistance being provided by neighbors, the construction of housing is being accelerated. Recently, a reclamation plan was carried out for the very first time.

From "A" To "Z"

Quite often the duties in a RAPO are shared and the overall benefits are thus multiplied. Specialization makes it possible for a farm to "strengthen" its principal branch. Neighboring elements develop other branches in an intense manner and all stand to gain.

An inter-kolkhoz hog farm was built not far from Pyarnu. It produces 4,300 tons of meat annually. Labor productivity here is higher by a factor of four than at hog farms or individual establishments. The average daily weight increase in the hogs -- more than 500 grams, less than 5 feed units are expended per kilogram of weight increase and the profitability of the enterprise is more than 60 percent.

Immediately, five farms in the region were able to release funds invested in hog raising. When construction is completed on the second such farm, hogs will be bred on only six farms in the region.

One of the most important branches of agriculture in Estonia is milk production. Ten years ago the average dairy stable accommodated 100 head. At the present time, more than 60 percent of the dairy herd is being maintained on farms of an optimum size -- 460 head. As a result of improvements in the maintenance conditions, the milk yields in Vil'yandinskiy Rayon have increased by 25 percent and now exceed 4,000 kilograms annually. Prior to the creation of RAPO's, Pyarnuskiy Rayon was considered to be a backward rayon and yet now the milk yields here are higher than the average for the republic.

Collaboration between the kolkhozes and sovkhozes on the one hand and the service enterprises on the other is being further developed. For example, many oblasts are experiencing shortages in the spare parts required for equipment. However, a spare parts "bank" has been established in Pyarnu attached to the RAPO administration. The availability of each type of spare part is maintained on a card index at the farms.

Today the farm leaders are conducting a search to determine what they can "contribute." They know that the more they can give to the general fund, the more they will be able to obtain during a difficult moment. And raysel'khoztekhnika furnishes assistance in complicated situations. Under the new conditions, it is considerable easier for it to solve the problems of supply.

Broad opportunities have opened up for inter-farm cooperation. The Pyarnu Inter-Kolkhoz Council for Peat Extraction consists of 20 members. It obtained some powerful equipment from RAPO and in 1981 it produced 170,000 tons of compost. Under the old system of administration, only 50,000 tons of this fertilizer were applied to the fields annually.

A clear example of regional cooperation -- the construction of a grass juice department by three farms in Pyarnuskiy Rayon. According to the scientists, this product has exceptionally high nutritional value. The shareholders receive 1,000 tons annually. In the process, 50,000 tons of fodder are processed and the waste products are used in the laying in of silage. Large dairy farms have been built alongside and the land is being drained for the sowing of perennial grasses.

Inter-farm enterprises for the production of mixed feed exist and the method of cooperation is being used for building many socio-cultural installations. If the alphabet of the economy is production specialization and cooperation, then in Estonia it has passed from "A" to "Z."

Certainly, not all of the farms entered the RAPO with a "rich dowery." But the backward ones are also members of the same large family, where the welfare of all is dependent upon each farm. From the very beginning, assistance for the economically weak farms has been one of the association's most important tasks. Plans are being developed for eliminating the backwardness.

Already, during the formation of the association's centralized funds, the weak farms have been provided with certain advantages. A normative deduction for the funds has been established in rubles per hectare of cultivated land. But in the process consideration is being given to the fertility of the land, to the availability of labor and other resources and to other indicators. In Vilyandi, for example, against an average norm for deductions of 8.58 rubles per hectare, the most powerful farm --

the Sovkhoz imeni Y. Gagarin -- pays 21.45 rubles and the weakest -- 4.29 rubles (less by a factor of five).

Five to ten percent of the farm profits are accumulating in the centralized funds. In addition to the three funds in existence at all of the cost accounting enterprises, there is also a mutual assistance fund at the Estonian RAPO's. It is used for covering losses and for providing assistance to the kolkhozes and sovkhozes in the form of short-term loans and one-time grants. Assistance for the backward farms is furnished from the other funds. In all, more than one third of the RAPO funds is allocated for these purposes.

The association's council controls the expenditures of all resources and it monitors the situation to ensure that they are not employed for maintaining backward farms but rather for bringing about improvements in production efficiency. The resources are used primarily for the intensification of farming. Indeed, low yields are the cause of overall backwardness and high production costs in animal husbandry. Assistance from the material incentives fund helps to raise interest in the results of labor and it also aids in the retention of personnel.

During their training periods, the agricultural specialists and skilled workers receive grants not from the farms but rather from the RAPO's. And they are sent out to work in all parts of the region. Thus the problem of providing the backward farms with specialists, with the aid of RAPO, has already been resolved. On the average, there are 30 specialists working at the kolkhozes and sovkhozes, with dozens of them working in RAPO administrations.

Mutual assistance among the farms within the association's framework is rapidly producing results. Just 2 years ago the Khalinga Kolkhoz was one of the weakest in the region. And yet today it occupies second place in terms of the principal indicators.

A Finnish Bath and Other Surprises

The personnel problem is arousing a considerable amount of concern among the economists. One means for attracting personnel to the rural areas is that of renovation and expansion of the housing fund. A sociological study has shown that the construction of single family homes holds the most promise for the future. In response to an RAPO order, the architects have developed several plans for individual homes. The construction organizations belonging to the association have attempted not to undermine their partners. They have carried out reconstruction work on a rapid basis and they have rejected multiple-apartment housing construction. At the present time, several thousand houses of a new type -- with all conveniences, garage, sauna and fireplace -- are being built throughout the republic. In those areas where such construction is being carried out, a process of "reverse" migration is underway -- the youth are transferring from the cities to the rural areas.

A house costs from 15,000 to 30,000 rubles, with a down payment of only 20-40 percent being required. Yes and even this money can be borrowed from a farm. The remaining amount is paid over a period of 20-30 years, with the greater the period of work at a farm the greater the advantages extended. Generally speaking, leading production workers are not required to pay off their remaining debt.

The Mezhkolkhozstroy [Interkolkhoz Construction Organization] is building children's, medical, and trade institutes in the rural areas. The clients include the RAPO Council, the regional councils and individual farms. The plans are ordered on a centralized basis. An interesting experiment was carried out at the Edazi Kolkhoz. All of the facilities -- from an office and post office to a medical station and "Avtoservis" -- were included in a large two-story building.

A Hurdle Race

There can be no doubt concerning the successes achieved by the Estonian RAPO's. The organization of the administration is still far from ideal. The rich potential of the RAPO's cannot be utilized owing to unresolved problems at the republic and union levels.

The most important problem -- the formation of the funds. The rapo creators assumed that the deductions must be obtained from the profits. However, an instruction exists which holds that they can be allocated only from similar type funds. As a result, the industrial and service enterprises -- members of RAPO -- are not contributing money to the overall "pot." Certainly, this is inhibiting regional development.

The interrelationships with enterprises of dual subordination are complicated. Their activities are not planned by the RAPO's and their plans are only coordinated. Their actions conform to the plans provided to them by the appropriate ministry. This turns out to be quite complicated at times. True, the RAPO council colleagues meet one another half-way when such a possibility exists, but why is it that this is not made the rule?

Another serious problem is that of the construction limits, which should not be redistributed in the general interest.

Finally, there is the planning. For a very long period of time the leaders of associations attempted to have a plan for procurements and profits provided to them, with reports being issued on the resources allocated. This is the method being followed at the present time. But the plans are being supplied on a timely basis, whereas the information on resources -- considerably later. One can readily imagine how much this would impede the work of the planners.

All of the problems confronting the RAPO's derive from the old system of management. They are fully capable of being solved. For example, the RAPO's themselves are now distributing equipment among the farms. And this has immediately and noticeably raised the efficiency of production operations.

* * *

The birthday of the RAPO's is 1 September. But this day is even more a training holiday. For the RAPO's represent a school for agriculture of the future. The most valuable experience drawn from the RAPO's is summarized in the USSR food program. But the potential of the associations has not been exhausted.

Started in Estonia, RAPO's are now found in Latvia and Georgia. The facts speak for themselves. They represent the wave of the future.

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AGRO-ECONOMICS AND ORGANIZATION

UKRAINIAN FOOD PROGRAM REVIEWED IN PARTY PLENUM SPEECH

Kiev PRAVDA UKRAINY in Russian 30 Nov 82 pp 3,4

/Report by Comrade Yu.A. Kolomyets during the 29 November 1982 Plenum of the Central Committee of the Communist Party of the Ukraine: "Food Program of the Ukrainian SSR for the Period Up To 1990"/

/Text/ Comrades! In the work being carried out by the party, Soviet and economic organs of the republic, just as throughout the country as a whole, an important place is occupied by fulfillment of the decisions handed down during the May (1982) Plenum of the CPSU Central Committee, which has become a great political event in the life of the party and state and a new landmark in the campaign to further improve the economy and raise the welfare of our Soviet people.

The food program approved by the Plenum is a most important component part of the party's economic strategy for the current decade. It constitutes an important turning point for the entire national economy with regard to the development of agricultural production and its associated branches and one that is directed towards ensuring that the country's population is reliably supplied with food products as rapidly as possible.

"It will be necessary" pointed out the general secretary of the CPSU Central Committee Yuriy Vladimirovich Andropov during the November Plenum, "to ensure that all practical actions in this important sector are coordinated with the food program."

In conformity with the decisions handed down during the 26th party congress, the May Plenum of the CPSU Central Committee and the June Plenum of the Central Committee of the Communist Party of the Ukraine, the Council of Ministers of the Ukrainian SSR has developed a food program for the Ukrainian SSR for the period up to 1990 which is an organic component part of the country's food program. The program has been approved by the Politburo of the Central Committee of the Communist Party of the Ukraine and has been presented for examination by the present plenum.

The text of the food program has been made available to those participating in the plenum. It sets forth the principal trends for development of the agroindustrial complex of the republic for the period up to 1990. Within the program, a great amount of attention is being concentrated on increasing the food resources.

A key problem continues to be that of achieving an accelerated and stable increase in grain production. The program calls for the cropping power of the grain crops to be raised to 32-33 quintals per hectare over a period of 10 years, that is, to increase it by 6-7 quintals or by 23-25 percent above the level achieved during the 10th Five-Year Plan. This will make it possible to ensure an average annual gross yield during the 12th Five-Year Plan on the order of 53-54 million tons.

The average annual production of sugar beets during the 11th Five-Year Plan is to be raised to 57 million tons and during the 12th Five-Year Plan -- to 60 million tons. This will make it possible to produce 6.6 million tons of sugar or to obtain no less than 38 quintals from each hectare of sowing.

The plans call for the gross yield of sunflower seed to be raised during the decade to 3.2 million tons annually, that is, to raise such production by almost one third above the level achieved during the 10th Five-Year Plan.

The program calls for a considerable increase in the average annual production of potatoes, vegetables, fruit and berries. Here we have in mind not only quantitative growth but also an expansion in the assortment of products and an increase in the deliveries of fresh products during the winter and spring periods.

A great amount of attention is being concentrated on increasing the production of animal husbandry products. The plans call for the average annual production of meat in dressed weight to be raised during the 12th Five-Year Plan to 4.6 million tons, milk -- 20.24 million tons, or to achieve increases of 32 and 12 percent respectively compared to the level for the 10th Five-Year Plan.

The successful implementation of the republic's food program will make it possible during the forthcoming decade to satisfy fully the population's requirements for bread, meat, milk, potatoes, fish products and sugar and also to improve considerably the supply of fruit and vegetable products.

In order to ensure the production of agricultural products in the volumes planned, the program calls for the use of specific methods for carrying out the plans. First of all, maximum improvements must be realized in the effectiveness of farming and animal husbandry and also in the utilization of the production-technical potential of the branches of the agroindustrial complex, their logistical base must be strengthened and scientific achievements and leading experience must be introduced into production operations on a more extensive scale.

In order to obtain the gross grain yields called for, special attention will be given in the future to increasing the production of the republic's principal food crop -- winter wheat. This will be accomplished through the introduction of new varieties and by raising the level of the agricultural practices being employed, by reducing losses and by improving the quality of the grain.

In addition, the production of winter rye, pulse and groat crops and especially corn will be increased, with the gross corn grain yield being raised to 9-10 million tons, or roughly doubled, by 1990.

In beet production, priority importance is being attached to raising the cropping power of sugar beets. The task is being assigned of raising its cropping power by

85 quintals during the decade. The plans call for this to be achieved by making more extensive use of new and productive varieties and hybrids on all of the beet growing farms and employing scientifically sound agrotechnical methods in the cultivation of beets. In addition, the tending, harvesting and processing of the crops grown must be carried out during the best periods.

In the interest of raising the cropping power and improving the quality of the seed for the republic's most valuable oil-bearing crop -- sunflowers -- the plans call for a considerable expansion in the introduction of an industrial technology, an increase in the applications of mineral fertilizers and, a point which is of special importance, improving seed production such that within the next few years it will be possible to convert over to sowing only hybrid sunflower seed.

For the purpose of intensifying the production of fruit and vegetable products and improving the supply of these products for the population, the plans call for the carrying out of a complex of measures of an organizational and agrotechnical nature. In particular, the plans call for the concentration and specialization of vegetable production in the most favorable soil-climatic zones and also the conversion of this branch over to an industrial basis. The sowings of vegetables on irrigated lands will be expanded and more extensive use will be made of progressive technologies. A most important task will be that of radically improving the organization of procurements and the transporting and storage of all products grown.

Here, just as in beet production, many reserves are available in potato production operations, as mentioned today in a very convincing manner in the report delivered by Vladimir Vasil'yevich Shcherbitskiy.

In animal husbandry, just as in farming, an increase in the production of goods will be achieved through the purposeful and persistent conversion of this branch over to the intensive path of development. The plans call for the weight increases of cattle to be almost doubled during fattening and for a considerable increase to take place in the productivity of the dairy herd.

Naturally, it will be impossible to achieve the mentioned goals if a strong and stable feed base is not created. Thus specific measures must be implemented aimed at creating a one and a half year's supply of coarse and succulent feed at each kolkhoz and sovkhoz, raising their output sharply and achieving considerable economies in the consumption of grain forage.

The October Plenum of the Central Committee of the Communist Party of the Ukraine clearly defined the means for solving this task. This consists first of all of raising the cropping power of the forage crops and natural feed lands. The sowings of perennial grasses must be expanded such that by the end of the 12th Five-Year Plan they will constitute no less than one half of all forage crop sowings. The plans also call for an expansion in the sowings of pulse crops, barley, oats, soybeans, lupine, rape and other high protein crops. Beyond any doubt, all of this will exert a positive effect on the feed balance and raise the protein content.

Great importance will be attached to the introduction in all areas of progressive methods for the procurement and storage of feed and to further development of the mixed feed and microbiological industry.

The scientific-technical programs "Agrokompleks" and "Sakhar," the all-round plans for raising the fertility of lands, for increasing the production of feed and feed protein and for the intensification of the animal husbandry branches and a number of other plans and measures have all been subordinated to the implementation of the plans outlined for increasing the production and procurements of field crop husbandry and animal husbandry products.

The food program calls for the logistical base for agricultural production to be strengthened substantially, for the all-round mechanization of farming and livestock husbandry to be completed for the most part by 1990 and for an increase to take place in the work volumes associated with the use of chemical processes and the reclamation of land.

No less than 1 million hectares of irrigated land and 1.3 million hectares of drained land will be placed in operation during the decade in the Ukraine. Thus, by 1990, almost one out of every six hectares of agricultural land will have been reclaimed. We are obligated to use such invaluable resources in a manner so as to ensure the greatest output.

Unfortunately, by no means is the planned cropping power being realized on all of the irrigated and drained lands. Last year alone the shortfall in output compared to the planned level amounted to approximately 25 percent. In Zaporozhye, Dnepropetrovsk and Nikolayev Oblasts, one out of every three hectares did not produce the planned cropping power. The agricultural organs in the various areas must ensure that their reclaimed lands are utilized in a highly effective manner and that the planned yields are obtained.

In addition to solving simultaneously those problems associated with improving agricultural production, life persistently requires that maximum measures be undertaken aimed at improving the work of industrial enterprises included in the agroindustrial complex. Thus, within the republic, the plans call for the high quality re-equipping of enterprises of the food branches of industry, the introduction of scientific and engineering achievements and a progressive technology and improvements in the level of all-round utilization of raw materials.

On the whole, the plans for the 11th Five-Year Plan call for 33.1 billion rubles to be used for developing the branches of the agroindustrial complex and the 12th Five-Year Plan -- 35.5 billion rubles worth of capital investments. The work must be organized in a manner such that proper use is made of the investments allocated, with substantial growth being realized as rapidly as possible in the production of food goods.

The timely introduction into operations of all facilities planned must be ensured in a very strict manner in all areas. The republic's ministries and departments and the oblast executive committees must be guided by the instruction handed down during the May Plenum of the CPSU Central Committee, which holds that construction projects of the agroindustrial complex are to be considered as highly important priority projects.

A high level of scientific-technical support is required in order to achieve the goals outlined in the food program. Thus the Southern Branch of VASKhNIL /All-Union

Academy of Agricultural Sciences imeni V.I. Lenin⁷ must play a substantially greater role and a greater contribution must also be made by the scientific institutes of the Academy of Sciences of the Ukrainian SSR.

The subsidiary farms of industrial enterprises and organizations must serve as a considerable source for augmenting the food resources. We could cite a number of examples illustrating the successful work being performed by these farms. However, some of the land areas being made available to the subsidiary farms are not being utilized in an efficient manner and the numbers of livestock and volumes of products being produced are still negligible. Taking into account the experience already accumulated, this situation should be corrected in a manner such that all of these farms carry out their production operations on an intensive basis.

Importance is also attached to developing further the private plots of kolkhoz members and manual and office workers, with maximum assistance being furnished to them by the local soviets, kolkhozes and sovkhozes.

The successful solving of the food problem requires a change in the attitude towards the consumption of food products. At times we discuss the "culture of farming," the "culture of production" and the "culture of labor." A need obviously exists for developing a "culture of nutrition," such that a more thrifty attitude will be displayed in all spheres concerned with the use of food products.

Measures for improving the administration of the agroindustrial complex were called for in the May Plenum of the CPSU Central Committee and great importance is being attached to the rayon level. In the near future, councils will be created for the oblast and rayon agroindustrial associations. Experienced leaders and highly skilled specialists must be selected for managing these associations who will be capable of examining the problems not through a prism of the agricultural sector alone but who will be responsible for the agroindustrial complex as a whole.

All of these and other urgent problems directly associated with improving the economic mechanism and agricultural administration were examined recently during a meeting in the CPSU Central Committee.

Member of the Politburo of the CPSU Central Committee and secretary of the CPSU Central Committee Comrade M.S. Gorbachev directed attention to the need for achieving efficient solutions for all of the organizational problems associated with the formation of the councils and the agroindustrial associations in the oblasts and rayons. Considerable attention was given to those practical tasks associated with raising the procurement prices for agricultural products on 1 January 1983 and introducing bonuses for adding on to these prices for the benefit of low profitability and unprofitable farms.

In the near future, the Committee on Agroindustrial Complex Problems of the Presidium of the Ukrainian Council of Ministers will present the Central Committee of the Communist Party of the Ukraine and the republic's government with proposals for improving the administration of the agroindustrial complex and raising the prices for agricultural products by zones throughout the republic.

A decisive condition for achieving the production growth planned for agricultural output is that of implementing large-scale measures of a social nature in the rural areas. With this fact in mind, an all-round program has been developed in the

republic for the social-cultural development of the rural areas during the 11th Five-Year Plan and for the period up to 1990. This program has been approved by the Central Committee of the Communist Party of the Ukraine and by the Ukrainian Council of Ministers and it has become a component part of the food program.

At the present time, all efforts by the Soviet and economic organs are being concentrated on carrying out the planned measures, so as to ensure that perceptible results will be achieved in the next few years, with the level of support for the rural population in the form of social-cultural and domestic installations approaching the prescribed norms by the end of the 1980's.

Definite tasks, to be carried out at various times, are set forth in the food program. During the course of solving them, as was emphasized during the November Plenum of the CPSU Central Committee, the carrying out of the food program must not be dragged out. The work must be performed in a manner such that the tremendous resources made available for solving these tasks will produce a return today and an even greater return tomorrow.

Under our condition, we have in mind mainly the campaign for next year's harvest and also the organized carrying out of the livestock wintering operations

All possible measures must be undertaken during 1983 to ensure that greater quantities of grain, sugar beets, potatoes, vegetables and other food and technical crops are obtained and also that the plans for producing and selling farming and animal husbandry products to the state are fulfilled.

At the present time, as never before, a requirement exists for greater efficiency and initiative in the Soviet and agricultural organs and, at the same time, personal responsibility on the part of the farm leaders and specialists for obtaining the planned gross yields of grain and other products. We must all arrange our planning, administrative, agronomic, zootechnical and all organizational work in a manner such that during any year we will have fine yields and high livestock and poultry productivity.

The speaker assured the Plenum of the Central Committee of the Communist Party of the Ukraine that all workers in the agroindustrial complex will actively implement the decisions handed down during the May and November Plenums of the CPSU Central Committee and make a worthy contribution towards implementing the country's food program.

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AGRO-ECONOMICS AND ORGANIZATION

PLANS FOR ACHIEVING FOOD PROGRAM GOALS SPECIFIED

Moscow EKONOMIKA SEI 'SKOGO KHOZYAYSTVA in Russian No 10, Oct 82 pp 68-77

/Article by Radomir Ivanovich Tonkonog, doctor of economic sciences, professor:
"Essence and Goals of the Food Program"/

/Text/ In its nature, scale, importance and social and economic consequences the May (1982) Plenum of the CPSU Central Committee can rightfully be ranked with the historical March (1955) Plenum of the CPSU Central Committee. The profound and exceptionally meaningful report by Comrade L. I. Brezhnev, the USSR Food Program for the Period Until 1990 first developed and approved by the plenum and the decrees of the CPSU Central Committee and the USSR Council of Ministers approved by the plenum represent a major, new contribution to the revolutionary doctrine of scientific communism, to the Leninist agrarian theory and policy of the party and to the practice of communist construction.

The plenum's decisions are a clear evidence of the party's tireless concern for the good of the Soviet people, a rise in their material and cultural standard of living and the creation of better conditions for an all-around development of personality on the basis of the further increase in the efficiency of public production, labor productivity growth and the social and political activity of workers. "Satisfaction of the vital needs of the Soviet people," Comrade L. I. Brezhnev stressed, "was and remains the most important program requirement of our party. That is why ... this plenum has a special meaning and is of special significance."

The plenum's decisions, Comrade L. I. Brezhnev's report and the decrees of the CPSU Central Committee and of the USSR Council of Ministers map out the basic ways and means of the further advance of agriculture and the entire agroindustrial complex and of the establishment of a sufficient and stable food stock for the country, which, in V. I. Lenin's expression, is the true basis for the socialist economy (see "Poln. Sobr. Soch." /Complete Works/, Vol 42, p 159).

A scientifically substantiated, overall approach to the solution of the food problem, handling of organizational-technical, social-economic and ideological-political matters in their mutual connection and organic unity and provision of a balanced and highly efficient development of the national economic agroindustrial system are the most characteristic features of the decisions of the May (1982) Plenum of the CPSU Central Committee and of the USSR Food Program.

Profound quantitative and qualitative shifts occurred in the development of agriculture during the years following the March (1965) Plenum of the CPSU Central Committee.

First, the material and technical base of agricultural production changed fundamentally. Fixed productive capital for agricultural purposes--the main decisive link of the material and technical base--increased from 77 billion rubles in 1965 to 238 billion rubles in 1980, or more than tripled. This means that two potentials similar in quantity, but much more efficient in quality, were added to the production potential of agriculture accumulated during all the years of the Soviet regime. This is the course of development of the Soviet economy at the present stage, whose productive forces are used to an ever greater extent for a steady advance of agriculture and its transformation into a highly developed sector of the national economy.

The delivery of mineral fertilizers to agriculture increased from 6.3 million tons (in terms of 100 percent of nutrients) in 1965 to 18.8 million tons in 1980, or threefold, and per hectare of arable land, from 28.4 to 83.9 kg respectively, or almost threefold. During the same time the delivery of chemical feed additives rose from 30,000 tons, or (in terms of 100 percent of nutrients) to 518,000 tons, or more than 17-fold. Major measures for a fundamental improvement in agricultural land were implemented. The total area of reclaimed land increased from 18.7 million hectares in 1965 to 34.3 million hectares in 1980, or 1.8-fold. (See "Narodnoye Khozyaystvo v SSSR v 1980 g." [National Economy in the USSR in 1980], Moscow, 1981, pp 237-240).

Second, the intensity of kolkhoz and sovkhoz production increased significantly. The gross output of agriculture increased from 82.8 billion rubles in 1961-1965 to 123.7 billion rubles in 1976-1980 (on the average, in a year), or 1.5-fold, and per 100 hectares of agricultural land, from 14,100 to 22,400 rubles respectively, or 1.6-fold. This was attained under the very unfavorable weather conditions of the last 3 years, which had a negative effect on the harvests and gross output of basic agricultural crops. The tendency toward an outstripping increase in the production of agricultural products as compared with population growth is observed clearly. For example, during those years per-capita gross agricultural output increased from 369 to 474 rubles, or 1.3-fold. This made it possible to increase the degree of provision of the Soviet people with foodstuffs and to significantly improve the structure of the food ration.

Third, profound changes took place in the living and working conditions of the Soviet peasantry. Many social problems were solved successfully. The average monthly wages of sovkhoz workers and employees doubled in 1980 as compared with 1965 and the wages of kolkhoz members increased 2.3-fold. The level of real income of kolkhoz members with respect to the real income of workers and employees per family member rose from 75 percent in 1965 to 89 percent in 1980. The appearance of the village changed in many of the country's regions. The way of life of rural workers is becoming different--much more meaningful and interesting.

In order to successfully accomplish the complex tasks concerning the qualitative transformation of agrarian production, the Communist Party and the Soviet Government considered it necessary and important to introduce fundamental changes in the

distribution of national income in favor of agriculture. The proportion of capital investments in the development of agriculture in the entire set of operations comprised the following in the total volume of capital investments in the national economy: 20 percent during the 7th Five-Year Plan, 23 percent during the 8th Five-Year Plan, 26 percent during the 9th Five-Year Plan and more than 27 percent during the 10th Five-Year Plan. Whereas in 1918-1980 the total capital investments of the state and kolkhozes in agriculture totaled 453.8 billion rubles, during the 9th and 10th Five-Year Plans, 301.6 billion rubles, or 66 percent. All this made it possible to establish a firm and modern material foundation for agricultural production--the basis for its dynamic and efficient development.

The fundamental shifts in the development of agriculture and the entire agroindustrial complex are a convincing confirmation of the scientific substantiation and effectiveness of the party's modern agrarian policy and of the high results of the selfless labor of agricultural workers and of the entire Soviet nation. This does not mean that all the problems have already been solved and that we can confine ourselves to what has been attained. The development of agriculture still lags behind the requirements placed on it. It does not fully meet the country's needs for foodstuffs and agricultural raw materials. "... The food problem," Comrade L. I. Brezhnev noted at the May (1982) Plenum of the CPSU Central Committee, "is by no means removed from the agenda." In a number of the country's regions there are interruptions in trade in foodstuffs, especially in meat and dairy products, and the average per-capita consumption of some highly valuable food products grows slowly. This is due to a number of reasons.

First, the demand for food products still greatly outstrips the production of foodstuffs, although it increases year after year. This is brought about by the rapid growth of the population's monetary income. The average monthly wages of workers and employees increased from 96.5 rubles in 1965 to 168.5 rubles in 1980, or 1.8-fold, wages on kolkhozes, from 51.3 to 118 rubles respectively and per-capita payments and benefits received from public consumption funds, from 182 to 438 rubles, or 2.9-fold (calculation according to "Narodnoye Khozyaystvo SSSR v 1980 Godu," Moscow, 1981, pp 364 and 381).

At the same time, it is important to stress that the growth of the population's monetary income occurs under the conditions of the party's systematic policy of ensuring the stability of state retail prices of basic consumer goods. This leads to an increase in consumption and, therefore, in the demand for the most important foodstuffs and nonfoodstuffs, primarily for meat, milk and other livestock products. For example, in groups of families with a monthly monetary income of up to 50 rubles per family member the annual per-capita consumption of meat is 40 kg and of milk and dairy products (in terms of milk), 250 kg. In groups of families with a monthly income ranging from 100 to 125 rubles per person the average annual consumption of meat is 88 kg and of milk, 400 kg per family member and in families with an income exceeding 125 rubles, 96 and 420 kg respectively.

The party's social policy is directed toward higher rates of growth of the monetary income of less provided categories of workers as compared with the increase in the income of the entire population. Whereas in 1965 only 4 percent of the country's population had a monthly income of more than 100 rubles per family member and in 1970, a total of 18 percent, in 1980, about one-half of the population. This precisely is the main reason for the rapidly growing demand for livestock products, which under the conditions of insufficient rates of production aggravates the existing difficulties in the market of foodstuffs.

Second, the urban population grew considerably, that is, from 123 million people in 1966 to 170 million people in 1981, or 1.4-fold. With regard to the rural population, it also greatly increased the purchase of food products in the state trade network, which was due to the growth of monetary income and to the reduction in the share of the private subsidiary sector in agricultural output.

Third, there was a significant expansion in the system of public dining (the total volume of trade turnover of public dining increased from 10 billion rubles in 1965 to 24 billion rubles in 1980, or 2.4-fold), of medical services, of sanatorium treatment and of organized rest of workers and in the network of preschool children's institutions.

The May (1982) Plerum of the CPSU Central Committee noted that the interruptions in trade in foodstuffs were also due to the insufficiently rapid increase in the efficiency of agriculture and of the entire agroindustrial complex. Owing to a number of reasons the rates of growth of the production of basic farm and livestock products have slowed down in the last few years, which did not make it possible to fully meet the population's effective demand for foodstuffs, especially for livestock products.

Taking all this into consideration and for the purpose of a fundamental solution of the food problem the 26th CPSU Congress considered it necessary to develop a special overall object food program. The USSR Food Program for the Period Until 1990 approved by the May (1982) Plenum of the CPSU Central Committee envisages the accomplishment of three interconnected tasks:

a significant increase in the production of agricultural products, a fuller satisfaction of the population's needs for foodstuffs and the creation of sufficient reserves for this. Plans are made to attain in 1990 a satisfaction of the needs of the Soviet people for such basic food products as meat, butter, vegetable oil, eggs, fish, margarine, hulled and rolled products and confectionery products according to rational norms and for some other products, that is, milk, vegetables, fruits and berries, to closely approach these norms;

the country's provision with sufficient local food and fodder resources, a reduction of the import of agricultural products from capitalist countries and a gradual expansion of the export of wheat and some other types of agricultural products;

unification of agriculture and the industrial, transport and trade sectors servicing it and subordination of their activity to a common ultimate goal--a reliable and regular supply of the population with high-quality varied foodstuffs.

Developing the USSR Food Program, the CPSU Central Committee and the USSR Council of Ministers took the following objective factors into consideration.

First, in the totality of measures for a rise in the people's well-being an ever fuller satisfaction of the needs of the Soviet people for food products is of fundamental importance. This is fully understandable, because man's needs for food are most pressing and people's health, work fitness and mood depend on the degree of their satisfaction. "The food problem," V. I. Lenin taught, "is the main problem. It is the problem to which we most of all pay attention in our policy." ("Poln. Sobr. Soch." [Complete Works], Vol. 36, p. 502).

second, at the stage of developed socialism a vast economic potential has been accumulated and a unified powerful national economic complex developing on the basis of a combination of the scientific and technical revolution with the advantages of the socialist system of economic management has been established. The country has available highly skilled and politically mature personnel in all national economic sectors. Extensive experience in administration and socialist management has also been accumulated. All this means that the country's possibilities and resources for a simultaneous and successful accomplishment of the most important social and economic tasks, that is, rise in the people's well-being, development of public production, strengthening of the country's defense, environmental protection and creation of favorable natural conditions for human life, have expanded immeasurably at the stage of developed socialism.

Third, under the conditions of industrialization and the constantly rising level of socialization of agriculture its dependence on other economic sectors has intensified extremely and intra- and intersectorial economic relations have become complex and diverse. The number of economic sectors, whose output is received by agriculture, has increased significantly. In 1959 they numbered 28 and in 1980, more than 70. At present approximately 85 percent of agriculture's funds has an industrial origin. In the material expenditures on the production of agricultural products embodied industrial labor accounts for more than 60 percent. K. Marx's foresight that at a certain stage of development "... agriculture no longer finds the conditions for its own production within itself, in a natural form, and these conditions as an independent production sector exist outside agriculture" (K. Marx and F. Engels, "Soch." [Works], second edition, Vol 46, part II, p 19) is realized fully.

An ever greater part of the gross output of agriculture is industrially processed: in 1928 a total of 20 percent, in 1959 a total of 39.6 percent, in 1972 a total of 52.4 percent and in 1980 a total of 60.2 percent (see VOPROSY EKONOMIKI, No 4, 1975, p 41; EKONOMICHESKAYA GAZETA, No 25, 1982, p 14). Thereby, agriculture is transformed into a sector producing primarily raw materials and gradually losing a direct connection with the final consumers of its output. All this brings about the need for a strict and firm coordination of all the sectors and links of a single agro-industrial food complex. Without this it is impossible to attain high final results of integrated production.

V. I. Lenin's words that "foodstuffs--small-scale local industry--fuel--large-scale statewide industry--and so forth, all these fields are closely connected and their 'departmental' division necessary for state administration does damage if constant work on coordination and elimination of frictions, red tape, departmental narrowness and formalism is not carried out" ("Poln. Sobr. Soch.," Vol 43, pp 278-279) are even more topical now. Public practice convinces us that major complex intersectorial problems are solved more efficiently by means of the development and implementation of special overall object programs.

Fourth, despite the increase in the production of agricultural products the country's needs for them are not yet fully met. There are interruptions in the supply of some foodstuffs for workers.

thus, the new opportunities of the developed socialist society, the need for a firm integration of agriculture and of all economic sectors associated with it into a single production organism and the necessity to ensure a regular supply of food-stuffs for the population in a short time--all this taken together made the development and implementation of the special overall food program urgent and expedient.

The food program has two aspects--physiological and socioeconomic. Provision of the total caloric value of a food ration in accordance with physiological norms is implied in the first case. From this aspect the food problem was solved in the USSR during the 9th Five-Year Plan. In 1975 the caloric value of the average daily ration of the Soviet man was 2,944 kilocalories with a norm of 2,936 kilocalories during that period. In this indicator the USSR is among the top 10 countries throughout the world.

In developed capitalist countries millions of people live under conditions of poverty and suffer from hunger and diseases caused by it. The caloric value of the food ration of a significant part of the workers is below physiological norms. This despite the fact that in these countries a sufficient amount of foodstuffs is produced and a high average level of consumption of food products is ensured. However, in imperialist states the food problem bears the imprint of the antagonistic contradictions of the capitalist method of production. It is connected with the inequality in the distribution of material wealth, with the relative and sometimes even absolute worsening of the situation of workers and with the constant and rising inflation, which leads to a continuous increase in the prices of food products.

Whereas in the general level of the caloric value the food ration of the Soviet man meets physiological norms, the structure of the diet needs to be improved considerably. The ration of the Soviet people is not balanced in some highly valuable nutritive substances, primarily protein. The share of vegetables, melon crops, fruits and berries is also insufficient in the food ration. At the same time, on the average, the daily per-capita consumption of carbohydrates exceeds the physiological norm by 19 percent, including of grain products, by 25.4 percent. Therefore, the food program is directed toward a significant improvement in the structure of the diet, which meets rational norms and maximally contributes to enhancing the health and increasing the work fitness of the Soviet people.

The socioeconomic aspect of the food program in our country is to provide the Soviet people with most food products according to rational norms and for some of these products to approach them closely in a relatively short time--two five-year plans. For this it is necessary, first, to greatly increase the production of foodstuffs and to have sufficient reserves of foodstuffs and, second, to ensure the appropriate level of the population's monetary income, which makes it possible to fully meet the needs for high-quality and diverse food products. Of great importance is also the regional aspect of the food problem--maximum consideration of national characteristics and historical traditions in the diet of various people, nationalities and groups of population in our great homeland.

Taking all this into consideration, the food program is not limited to the attainment of rational nutrition norms according to the 10 consolidated groups of food-stuffs. Nutrition norms in a detailed form represent these 10 groups in the form of 55 subgroups and individual food products. On the whole, however, on the basis of the national and regional distinctive features of the population's diet

the ration's assortment is even more varied. The rational diet of the Soviet people is designed not only for the attainment of the model, standard norm, but also for a full satisfaction of individual needs, which sometimes deviate considerably from generally accepted norms.

Therefore, the food problem is a complex and multiplane problem, whose solution requires the implementation of organizational-technical and socioeconomic measures in their interconnection and organic unity. The USSR Food Program for the Period Until 1990 is directed toward such an overall fundamental solution of the food problem.

Table 1 gives a more specific idea of the growth of agricultural output envisaged in the food program.

Table 1. Dynamics of Production of Basic Types of Agricultural Products in USSR
(on the average in 1 year, million tons)

Products	1976-1980	1981-1985	1986-1990	1986-1990
				in relation to 1976-1980
				absolute increase million tons
Grain	205.0	238-243	250-255	45-50
Sugar beets	88.7	100	102-103	13.3-14.3
Vegetables and melon crops	33.8	33-34	37-39	3.2-5.2
Fruits and berries	9.4	11-12	14-15	4.6-5.6
Grapes	5.6	7.5-8	10-11	4.4-5.4
Meat (carcass weight)	14.8	17-17.5	20-20.5	5.2-5.7
Milk	92.7	97-99	104-106	11.3-13.3
Eggs (billion)	63.1	72	78-79	14.9-15.9

As a result of the significant increase in the production of agricultural products during the 11th Five-Year Plan, along with the satisfaction of the population's demand for bread, a wide assortment of bread and flour products, potatoes and sugar, provision is made to meet the need for hulled and rolled products, confectionery products, margarine, eggs and fish and to improve the supply of meat, milk, vegetable oil and fruit and vegetable products. During the 12th Five-Year Plan main emphasis will be placed on an increase in the consumption of meat, vegetable oil and basic types of fruits and vegetables (see table 2).

The party proceeds from the fact that agriculture is the basic and central link of the agroindustrial complex. Therefore, an accelerated growth of agricultural production and its transformation into a highly developed and efficient sector of the socialist economy are the initial base of the fundamental solution of the food problem and a successful fulfillment of the food program.

The completion in the 1980's of the transfer of agricultural production to an intensive path of development and a significant increase in its efficiency are the main and decisive means of achieving this goal. One of the main characteristics of the party's agrarian policy in 1981-1990 lies in this. "The key to the efficiency of agriculture," Comrade L. I. Brezhnev stressed at the May (1982) Plenum of the CPSU Central Committee, "lies in production intensification. The food program aims at such a path."

Table 2. Consumption of Basic Food Products (per capita, per year, kg)

Food Products	1980	1985	1990
Meat and meat products	58	62	70
Fish and fish products	17.6	18.7	19.0
Milk and dairy products	314	318	330-340
Eggs	239	253	260-266
Sugar	44.4	44.9	45.5
Vegetable oil	8.8	10.4	13.2
Vegetables and melon crops	97	110	126-135
Fruits and berries	38	49	66-70
Potatoes	112	115	110
Grain products	138	137	135

The completion, basically before 1990, of overall mechanization of farming and livestock breeding and a widespread dissemination on this basis of industrial technologies of production of agricultural products are envisaged. During the decade 3,740,000 to 3,780,000 tractors, 1,170,000 grain harvesting combines and other agricultural machines worth 67 to 70 billion rubles, or 1.8 times more than in 1961-1970, will be delivered to agriculture. As a result, during the decade the power capacities of agriculture and power supply (per 100 hectares of sown area) will be increased 1.6-fold and the power-worker ratio, 1.8-fold.

The 26th party congress and the May (1982) Plenum of the CPSU Central Committee set the task of a significant improvement in the quality of manufactured agricultural machinery, that is, increase in the productivity, reliability and durability of machines and equipment, rise in the energy saturation and operating speed of tractors, in the carrying capacity of combines, in the width of cut of machine units and in the universalization of equipment and creation of more favorable conditions for the work of machine operators. Discussing the quality of produced products, Comrade L. I. Brezhnev stressed: "Correspondence to the best world and domestic models--we cannot and must not agree to anything less than that" ("Materialy XXVI S"yezda KPSS" /Materials of the 26th CPSU Congress/, Moscow, 1981, p 43).

For a successful accomplishment of the task of a fundamental technical retooling of agriculture and of all the sectors of the agroindustrial complex the scientific and design base, tractor and agricultural machine building, light and food industries and a number of other sectors are strengthened significantly. A certain regrouping of scientific forces among industrial sectors is done and the high scientific and technical potential of the basic sectors of heavy industry, including defense sectors, is more fully utilized for an acceleration of scientific and technical progress in agriculture and in the economic sectors associated with it.

Thus, the vast resources and possibilities of developed socialism are placed to an ever greater extent at the service of a fundamental solution of the central socioeconomic problem of the 1980's, that is, a reliable and full satisfaction of public needs for foodstuffs and agricultural raw materials.

An all-around chemicalization, primarily a widespread application of mineral fertilizers for an increase in the economic fertility of soil, which ensures 50 to 60 percent of the increase in harvests, is the most important means of intensification and provision of a greater stability of agricultural production. The food

program envisages the delivery of 26.5 million tons of mineral fertilizers to agriculture in 1985 and 30 to 32 million tons, in 1990 (in terms of 100 percent of nutrients) as compared to 18.8 million tons in 1980. Therefore, during the 1980's the deliveries of mineral fertilizers to agriculture will be increased 1.7-fold. The deliveries of chemical feed additives will increase to 950,000 tons and 1.2 million tons respectively as compared to 518,000 tons in 1980.

Measures to improve the quality of mineral fertilizers have been determined. By 1990 the production of highly concentrated and complex fertilizers will comprise no less than 90 percent in their total volume. Beginning in 1988 fertilizers for agriculture will be produced only in granular or large-crystal form (with the exception of phosphorus meal). The production of liquid complex fertilizers on the basis of superphosphoric acid is expanding. The concentration of nutrients in mineral fertilizers is increasing considerably. The dynamics of nutrient concentration in them is as follows: 1965--26.4 percent, 1970--29.4 percent, 1975--35.8 percent, 1980--38 percent and by 1985 it will reach 42 percent.

Large-scale reclamation of agricultural land and a more efficient utilization of renewed land are integral links of intensification of agricultural production.

Land reclamation serves as one of the most reliable means of a gradual decrease in the unfavorable effects of the natural element on the final results of agricultural production and on its greater stability and efficiency. We carry on agriculture under unfavorable natural-climatic conditions. Up to 60 percent of the agricultural land and 58 percent of the arable land are located in arid and semiarid zones and on 40 percent of the arable land there is an annual precipitation of up to 400 mm. During the current decade land reclamation is carried out at high rates everywhere. The area of irrigated land will increase from 17.3 million hectares in 1980 to 20.8 million hectares in 1985 and to 23 or 25 million hectares in 1990 and the area of drained land will increase from 13.4 million to 15 million hectares and 18 to 19 million hectares respectively. Zones of guaranteed grain, especially corn, production are created in regions of irrigated farming. In 1985 the gross output of grain from irrigated land will total no less than 15 million tons and in 1990, 20 to 22 million tons.

An increased intensification of kolkhoz and sovkhoz production will make it possible to greatly increase the yield of agricultural crops and the productivity of animals. This is the main condition for an increase in the output of farming and animal husbandry. On the average, the yield of grain crops will increase from 16 quintals per hectare in 1976-1980 to 21 or 22 quintals per hectare by 1990. On the average, the milk yield per cow will increase by 500 to 600 kg by 1990. In regions of developed dairy farming the average annual milk yield per cow will total no less than 4,000 kg.

The increase in the yield of agricultural crops and in the productivity of animals puts in the forefront the improvement in selection and seed growing, introduction of scientifically substantiated zonal farming systems, refinement in the qualitative composition of the stock and in pedigree work and development of highly productive breeds.

The establishment of a firm feed base is the decisive factor and the main potential for an increase in the productivity of animal husbandry. "Everything that we want to have from animal husbandry--more meat, milk and other products,--" Comrade L. I. Brezhnev stressed, "ultimately, all this depends on the sufficiency of varied high-quality feed" ("Leninskij Kursom" /Following Lenin's Course/, Moscow, 1979, Vol 7, p 411).

However, feed production is now the biggest bottleneck in the development of animal husbandry and, ultimately, of all agriculture. Therefore, the 26th party congress and the May (1982) Plenum of the CPSU Central Committee set the task of fundamentally improving feed production and the satisfaction of the needs of public animal husbandry, as well as of livestock and poultry privately owned by citizens, for feed.

Plans have been made to complete the development and to begin the implementation of the overall program for the establishment of a reliable and balanced feed base for animal husbandry in the country. Feed production on kolkhozes and sovkhozes takes on a specialized sectorial nature. Special attention is paid to the provision of farms with their own feed. During the current decade, as compared with the previous one, the increase in feed production will double. The expenditure of feed per standard head of livestock will total 33 quintals of fodder units in 1985, as compared with 26 quintals of fodder units in 1980. This will make it possible to increase the productivity of animal husbandry. However, it is important not only to increase the production of feed, but also to rationally utilize it and to increase feed-conversion efficiency. It is primarily a matter of feeding grain to animals correctly and with the greatest effect and of using it for fodder purposes economically.

The implementation of the food program largely depends on an overall approach to the solution of problems of elimination of existing disproportions in the development of agriculture and of the sectors connected with it and of provision of a balanced and efficient functioning of a single agroindustrial system. "We increasingly often encounter a situation," Comrade L. I. Brezhnev said at the May (1982) Plenum of the CPSU Central Committee, "when the storage and processing of products and their delivery to the consumer, not their production, become the bottleneck." Therefore, the food program envisages accelerated rates of development of the industrial sectors producing means of production for agriculture and processing its output, as well as of the production infrastructure of the agroindustrial complex.

The tactics in the distribution of capital investments is also changing. For example, while during the current decade capital investments in the entire agroindustrial complex have increased by roughly 30 percent, in tractor and agricultural machine building and in machine building for animal husbandry and feed production they have more than doubled and in machine building for the food industry, almost tripled. To improve the conditions of storage of products and to reduce their losses, 15 billion rubles of capital investments are allocated for the 11th Five-Year Plan alone, or 1.6 times more than during the previous five-year plan. Therefore, the party's policy of a significant improvement in the structure of the agroindustrial complex and of the maximum possible strengthening of its material and technical base--this is the most important guarantee for a successful solution of the food problem and for the attainment of the maximum final national economic results.

However, this is one aspect of the matter. Improving production relations and bringing them in line with the new nature and level of development of public productive forces--this is another aspect, which is no less important. "... Public relations of production," K. Marx stressed, "change and are transformed with the change and development of material means of production and productive forces" (K. Marx and F. Engels, "Soch.," second edition, Vol 6, p 442).

Improvement in production relations is expressed in new forms and methods of management, planning and cost accounting and in the creation of economic conditions for a stable profitability of farms.

The agroindustrial complex is singled out as an independent object of planning and management for the first time. This will make it possible to better and more efficiently combine sectorial, territorial and object-program management, which is based on the final result--a full and reliable satisfaction of the country's needs for foodstuffs and agricultural raw materials. The new system of management of agriculture and of the sectors connected with it is directed toward the attainment of this goal. Agroindustrial associations headed by councils are established in rayons, oblasts, krays and autonomous republics and commissions on problems of development of agroindustrial complexes, in the Union republics and the center.

Special importance is attached to the rayon link. Councils of rayon agroindustrial associations--uniform and democratic management bodies with the necessary rights for a practical effect on production with due regard for the interests of kolkhozes and sovkhozes--are formed here. At the same time, the organizational-economic independence of kolkhozes and sovkhozes is expanded and strengthened and an unjustified interference in their activity, bureaucratic administration and petty tutelage are stopped.

A rise in the efficiency of agriculture is impossible without stable economic conditions for true, not formal, cost accounting. At present there is an obviously abnormal economic situation, in which many kolkhozes and sovkhozes are unprofitable, while the enterprises and organizations servicing them derive big profits and are in a strong financial position. Under these conditions the role of economic incentives and levers is lost, the basis for cost accounting methods of economic management is undermined and the entire process of expanded agricultural production is hampered significantly.

In order to improve the economic situation in rural areas, in accordance with the decisions of the May (1982) Plenum of the CPSU Central Committee a set of measures, which in its scale and extent of effect on kolkhozes and sovkhozes represents a major economic and political action, is implemented. As of 1 January 1983 there is a rise in purchase prices and purchase price markups for the basic types of farm and livestock products for the total amount of 16 billion rubles per year are introduced.

At the same time, it should be stressed that a fundamental change is introduced in the party's policy in the area of purchase prices of agricultural products. Along with an increase in purchase prices throughout the country purchase price markups for products sold to the state by low-profitability and unprofitable kolkhozes and sovkhozes are introduced. This measure is due to the fact that the country's kolkhozes and sovkhozes do not have the same possibilities for the development of production and the derivation of gross income owing to a different natural basis for economic management.

The quality of land and natural conditions are the key factors determining the level of development and income of agricultural enterprises. The establishment of purchase price markups for the products of farms managing their production under worse and nonreproducible natural conditions will make it possible to more fully take into consideration rent relations in agriculture and to withdraw with greater substantiation into the budget, with a subsequent redistribution among farms, the surplus (differential) net income derived by kolkhozes and sovkhozes located in zones and microzones with better and average natural conditions.

On the basis of the decisions of the May (1982) Plenum of the CPSU Central Committee the wages of agricultural workers are improved, the brigade collective contract and the job-contract-plus-bonus system are introduced widely, the practice of payment in kind is expanded, the financial position of kolkhozes is strengthened and debts on State Bank loans totaling 9.7 billion rubles are written off from them.

The new economic mechanism of the agroindustrial complex is directed toward an optimal combination of the material interests of all the labor collectives of the agroindustrial complex and the subordination of their activity to the attainment of not only intermediary, but mainly final, national economic results. Along with the performance of services the results of agricultural production, that is, fulfillment of plans by kolkhozes and sovkhozes and increase in the production of farm and livestock products, will form the basis for an evaluation of the work of and material incentives for enterprises and organizations servicing kolkhozes and sovkhozes.

A decisive and sharp turn to fundamental social transformations in rural areas and approximation of the working and living conditions of the rural and urban population are the most important characteristic features of the food program. During the first years of the Soviet regime V. I. Lenin pointed out that "... the problem of the organization of the way of life of the vast majority of the population--the peasant population--is a fundamental problem for us" ("Poln. Sobr. Soch.," Vol 45, p 248). The food program envisages a significant expansion of the scale of housing and cultural-general construction in rural areas. Whereas in 1976-1980 a total of 149.1 million square meters of dwelling houses were commissioned in rural areas (at the expense of all sources of financing), during the 11th Five-Year Plan dwelling houses of a total area of 176 million square meters, or 20 percent more, will be built. During the 12th Five-Year Plan the volume of housing construction will increase by 15 to 18 percent.

At the same time, it is important to stress that well-planned dwelling houses, basically of the farmstead type, with farm buildings for private subsidiary plots will be built. The construction of schools, children's preschool institutions and clubs will be expanded. Medical, trade and domestic services for the rural population will be improved.

Road construction is an urgent problem in rural areas. Despite the fact that road construction increases significantly every year, the state and level of development of the transport-road network remain the weakest sections of the economic and social development of rural areas. A significant part of kolkhozes and sovkhozes do not have intrafarm hard-surface roads, which causes great losses of products and has a negative effect on the standard of living of rural workers. A total of

54,000 km of public motor roads connecting the central farmssteads of farms with ra-
yon centers and 57,000 km of intrafarm hard-surface roads are to be put into opera-
tion during the 11th Five-Year Plan. During the 12th Five-Year Plan the length of
these roads is to be increased 1.4- and 1.6-fold respectively.

Approximately 160 billion rubles are to be allocated for social transformations
during the 1980's. This is a big figure even according to our big scale. However,
these are not only impressive figures. This is a fundamental policy directed to-
ward a gradual elimination of the significant socioeconomic differences between ur-
ban and rural areas. This is a convincing evidence of the extensive possibilities
of mature socialism and of the genuine concern of the Communist Party for the good
of the Soviet nation. Thereby, the party's program requirement, that is, to in-
creasingly advance along the path of approximation of the material and cultural-
general living conditions in urban and rural areas and of the communist transfor-
mation of social relations in rural areas, is implemented systematically.

The USSR Food Program approved by the May (1982) Plenum of the CPSU Central Commit-
tee is a wide battle front of actions of the party and of the entire Soviet people.
"The food program," Comrade L. I. Brezhnev stressed at the plenum, "is not only a
fundamental turn in the advance of agriculture and of the sectors connected with
it. In its nature and scale it is to ensure the progress of the entire national
economy." Therefore, it is necessary to manifest maximum persistence and initia-
tive everywhere and to utilize all potentials and possibilities in order not only
to fulfill, but also greatly overfulfill, the established plans.

To attain this, every person at his work place must work even better and more con-
scientiously, improve his occupational skills and organization and actively fight
against mismanagement and waste. It is important to persistently adopt everything
that is valuable and advanced and introduce it into production everywhere, to de-
velop the creative initiative and socialist enterprise of the workers' collective,
to increase the effectiveness of socialist competition and to efficiently utilize
everything that has been created by the Soviet nation.

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AGRICULTURAL MACHINERY AND EQUIPMENT

TRACTOR MAINTENANCE PROBLEMS DISCUSSED

Moscow EKONOMIKA SEL'SKOGO KHOZYAYSTVA in Russian No 12, Dec 82 pp 55-59

Article by K.M. Kavalierchik, senior scientific worker at BelNIIEOSKh: "Technical Service Problems"

Text Growth in the technical equipping of agriculture and the introduction into production operations of complicated complexes of machines and industrial flow line technologies are placing greater emphasis upon the problem of achieving work efficiency and equipment reliability. This problem cannot be solved only in the area of production of machines, through improvements in the designs and technology for their manufacture. The organization of technical services and the repair of machines are included among the problems of priority importance. The quality of technical services is exerting an increasing influence on the effectiveness of equipment usage and on the economics of kolkhoz-sovkhoz production.

However, it bears emphasizing that the existing organizational forms and methods for the technical servicing and repair of agricultural equipment by enterprises of Goskomsel'khoztekhnika are not in keeping with the modern requirements. In particular, mention should be made regarding the problems in economic relationships between the agricultural and repair-servicing enterprises. For example, in 1980 the kolkhozes and sovkhozes in Berezovskiy Rayon in Brest Oblast converted over to the guaranteed servicing of their machine-tractor pool by Goskomsel'khoztekhnika. Raysel'khoztekhnika, on the basis of agreements with the farms, carries out periodic technical servicing of the tractors, analyzes the technical status of the machines and ensures a guaranteed supply of spare parts and repair materials. For the purpose of carrying out the mentioned types of work, a specialized service for TO MTP tekhnicheskoye obsluzhivaniye mashinno-traktornogo parka; technical servicing of the machine-tractor pool was created at the raysel'khoztekhnika. The table of organization for this service includes engineer-technologists (one for every 2-3 farms), an engineer-diagnostician, a group of workers responsible for supplying the farms with spare parts and repair materials (one for every 1-2 farms, in addition to trade base workers) and a bookkeeper; expert trouble shooters from kolkhozes and sovkhozes were also transferred to this service. The service is headed by the deputy manager of the raysel'khoztekhnika. The work carried out is paid for by the kolkhozes and sovkhozes according to the estimated cost, which includes the direct and overhead expenses, planned savings (10 percent) and deductions for the bonus fund (25 percent of the principal wages).

The conversion over to the guaranteed form for technical services has made it possible somewhat to improve the organization and accounting for work carried out. This has been promoted by the conversion of expert-trouble shooters over to piece-rate wages and to releasing them from duties not associated with the servicing of machines. One positive feature is the fact that a portion of the work is being carried out during the inter-shift period, with noticeable improvements taking place in the supplying of the farms with spare parts. At the same time, the principal planning and evaluative indicators for the work performed by the TO MTP service are the volume of services sold in monetary terms and profits. This prompts the workers to display concern mainly for the financial results of their work and it inflates unjustifiably the cost of the work carried out.

The material stimuli being employed are not motivating the Sel'khoztekhnika service towards improving the quality and efficiency of the work being carried out. Owing to poor quality servicing, a majority of the tractors are not completed prior to the planned period for carrying out the TO-3 /technical servicing/, by which time they require repair work as a rule.

Such a servicing system cannot promote an increase in the effectiveness of use of equipment or a reduction in expenditures for its maintenance. To the contrary, it engenders additional and unjustified farm expenditures. With the conversion over to guaranteed services, the expenditures for ensuring the operational efficiency of the tractor pool of kolkhozes and sovkhozes in the rayon, per standard hectare, increased by 18.1 percent.

Within the system of technical services, a special place is occupied by the capital repair of machines and units. In the case of capital repairs, in addition to the correct working order of machines, their technical service life and other operational characteristics are also restored. In essence, capital repairs constitute a secondary production of machines using elements operated earlier as procured working parts. At the present time, capital repairs are carried out mainly by specialized enterprises of Goskomsel'khoztekhnika, which have modern equipment at their disposal and which introduce technologies based upon the principles of mass production.

However the desired effect from the implementation of large-scale measures for intensifying capabilities and the modernization of specialized repair production operations is not being realized. The quality of the capital repair work continues to remain low. Thus, in accordance with the requirements set forth in State Standard 18523-79, the service life and reliability of tractors following capital repair work must be no lower than 80 percent of the respective indicators for new machines. Meanwhile, studies have shown (see Table 1) that the average service life for tractors which have undergone capital repairs is 45-50 percent lower and that the proportion of funds required for maintaining the working efficiency of the tractors is higher by a factor of 1.4-1.8 than that for new machines. During the post-repair period the productivity of tractors is 15-20 percent lower than during the pre-repair period.

Losses from idle time caused by technical problems in tractors which have undergone capital repairs are greater by a factor of 1.4-3 than in new machines. When the quality of the work carried out at enterprises of Goskomsel'khoztekhnika is low, an unjustified tendency towards growth in the cost of repair work is observed. It is

TABLE 1

Operational Characteristics of New Tractors and Those Which Have Undergone Capital Repairs

	T-74, DT-75		MTZ-50, MTZ-52		T-25, T-16	
	Prior To Capital Repairs	Foll. Capital Repairs	Prior To Capital Repairs	Foll. Capital Repairs	Prior To Capital Repairs	Foll. Capital Repairs
Number of machines studied, in units	110	87	135	118	76	64
Average annual output, in standard hectares	1150	922	1068	894	357	315
Output during 1st year of operation, in standard hectares	1282	1062	1165	962	396	342
Average service life, in standard hectares	3545	1777	3411	1767	1313	720
80% gamma-service life, in standard hectares	2714	982	2485	1125	847	395
Average expenses for technical services and repair, in kopecks per standard hectare	26	64	22	45	32	48
Ibid, in % of norm	116	278.7	70	140.6	95	140.3
Losses from idle time caused by technical reasons, in kopecks per standard hectare	13	40	17	37	56	80

important to note that in the face of constant wholesale prices in the same proportion and in some instances excessive rates, the cost of the work in terms of sale prices increases (see Table 2).

It follows from the table that given the existing indicators for quality and expenditures, the capital repair of tractors is unprofitable not only for the consumers but also for the repair enterprises, that is, it is unprofitable for the national economy on the whole. However, a rejection of capital repairs would tend to limit the service life of tractors to 4-5 years and this would be totally unacceptable from the standpoint of national economic interests. Machines which have been operated for such a period lose only a portion of their initial suitability. No less than 85 percent of the parts of tractors are suitable for restoration and repeated use and modern technology makes it possible to restore their operational efficiency in a reliable and economic manner. Numerous studies of leading domestic and foreign experience reveal that restored parts, in terms of wear and tear and economic considerations, are not inferior to new ones and in some instances even surpass them. In the case of capital repairs, the complete restoration of the operational characteristics of machines, lost as a result of physical wear and tear, is possible. In addition, capital repairs can serve as an effective means for eliminating or weakening obsolescence. When production operations are organized properly, such a level of quality for repair work is not only technically possible but in fact, as noted below, it is economically advisable.

TABLE 2

Objekts of Repair	Effectiveness of Capital Repairs At Enterprises of Goskomsel'khoztekhnika for the BSSR*						Cost of One Repair Task At Selling Prices, in rubles	Profit (+), Loss (-), rubles	
	1976	1977	1978	1979	1980	1981			
Tractors									
including	774	795	848	961	973	724	753	814	866
DT-75, T-34, T-772	996	1015	1052	1071	1081	924	939	1035	893
MTZ-50, MTZ-30	635	647	882	744	750	515	535	840	639
MTZ-80, MTZ-82	-	1250	950	978	1000	-	1325	1064	675
T-40A, T-60A	600	591	664	612	631	597	579	676	619
T-25, T-10A	443	464	-	490	498	494	507	540	511
Grain harvesting combines	911	998	1004	1094	1097	114	879	913	904
Motor vehicles	725	767	-	961	1035	1040	927	-	736
									901
									+315
									+160
									-
									-225
									134

* According to annual report data of Goskomsel'khoztekhnika for the BSSR

Thus, serious shortcomings in the technical services for our country's agriculture stand out clearly against the background of modern requirements. During the May (1982) Plenum of the CPSU Central Committee it was mentioned that those enterprises and organizations which provide services for agriculture are associated with the kolkhozes and sovkhozes to only a weak degree both organizationally and economically. In this regard, the need was recognized for developing a system of measures aimed at improving the economic relationships of agriculture with other branches of the national economy. These measures must call for an increase in the material responsibility of the service enterprises and organizations for the quality and schedules of the work carried out, for intensifying their interest in achieving high final results in the production of agricultural products and for increasing the economic efficiency of production at the kolkhozes and sovkhozes. This applies in full measure to repair and servicing production operations.

The task of improving the organizational-economic principles of technical services must be solved taking into account the objective realities and national economic interests. First of all, it bears mentioning that the requirement for skilled technical servicing and repair work is an organic characteristic of modern machines and one which is embodied in the very design, in the inadequate service life and in the wear and tear to which their elements are subjected to. Wear and tear and losses in the operational efficiency of machines constitute an irreversible process. Thus, regardless of how perfect a machine might be, it will nevertheless require a certain degree of servicing and repair work. In other words, not only at the present time but also in the future the quality of the repair and servicing work will play a definite role in the maintenance of the operating efficiency and reliability of machines during their periods of operation.

Studies and practical experience have shown that in the presence of high quality servicing and repair work for the equipment being produced today, the actual expenses for

ensuring the operational efficiency of the machine-tractor pool can be lowered by 30-40 percent and the normative service periods for tractors and combines extended by a factor of 1.3-1.5 times. This implies that in the presence of well organized technical services the expenses for acquiring and maintaining agricultural equipment for the country as a whole can be reduced by roughly 2 billion rubles.

The measures employed for maintaining machines in good operating condition are diverse in terms of both their nature and complexity. In one instance there may be a requirement for adjustment work or a simple replacement of individual elements, in another -- a partial dismantling of a machine with the replacement or repair of units or assemblies and thirdly -- complete or almost complete restoration of the initial official characteristics of a machine. The diverse nature of the preventive maintenance and repair operations predetermines the specific requirements with regard to the production conditions for their fulfillment. This results in the parallel existence of production base elements for the technical servicing and repair of machines which vary in terms of both size and equipment: central and periphery points for technical servicing at farms, rayon (inter-farm) workshops and technical servicing stations, specialized repair enterprises. Together with technical exchange points and supply bases, they constitute a single repair-servicing complex for agriculture, intended for ensuring the required technical readiness of machines with minimal expenditures of labor and resources. Its efficient functioning is possible only if there is a harmonious merging of interests among the partners, the work and responsibilities are distributed correctly and rational production and economic relationships are maintained among the elements of the repair network.

Tremendous capabilities for the capital repair of machines have been created within the Goskomsel'khoztekhnika system. Compulsory measures are often employed to ensure a constant workload. As a result, up to 25-30 percent of the tractors and motors are scheduled for capital repair work prematurely, with full use not having been made of their technical service life. At the same time, many kolkhozes and sovkhozes lack the basic conditions for technical servicing and the operational repair and storage of equipment. Thus a priority task is that of achieving proper distribution of the work and logistical resources by objects in the repair network and eliminating disproportions in its development. In the process, it should be borne in mind that the farms are not capable of carrying out the entire volume of work associated with the maintenance and restoration of the operational efficiency of modern machines using their own forces and resources. Moreover, it is unrealistic and irrational to strive to achieve this while ignoring the production-technical potential of Goskomsel'khoztekhnika.

Considerable importance is attached to improving the system of planning and evaluating the production activities of repair-servicing enterprises. At the present time, it conflicts with the interests of consumers and it fails to stimulate more complete utilization of the technical potential embodied in the machines or lower the expenditures for their servicing and repair. Actually, the more repair work that is carried out and the more expensive it is, the better the cost accounting indicators for the repair and servicing enterprises. The task is one of extending the pre-repair and inter-repair service periods for the machines by improving the quality of the technical servicing work, ensuring their reliable operation and reducing the number of repair operations and the expenses for carrying them out. Improvements in the quality of repair operations, while advantageous from a national

economic standpoint nevertheless are in conflict with the interests of enterprises, since they require additional labor and material expenditures and they lower the quality of the products produced and the profitability level.

The production activities of repair and servicing enterprises must be evaluated not in terms of the number of repair operations but rather on the basis of the quality and effectiveness of those operations which determine the final results of equipment usage. Accordingly, the level of payments for repair work carried out on a contractual basis must define not the actual expenses of the repair enterprises, but rather the real effect realized in the sphere of machine usage. In conformity with the specific types of work, the realization of this principle has its own particular peculiarities.

The enterprises of raysel'khoztekhnika must undertake responsibility not for the fulfillment of individual types of work, but rather for the technical status of the machines and for the readiness indicators for the pool in accordance with the calendar periods, the agricultural work periods and the required production conditions. Together with the machine operators of farms, the repair and servicing personnel of raysel'khoztekhnika must carry out the entire volume of work associated with maintaining the operational efficiency of the machines during their operational periods -- technical servicing and current repairs. If, as sometimes happens, Sel'khoztekhnika performs only technical servicing, with the repair work being carried out by the farm itself, then Sel'khoztekhnika receives a guaranteed payment and bears practically no responsibility whatsoever. The farm must pay for all imperfections, for non-fulfillment of the plan and for untimely and poor quality servicing of the machines, since it carries out a large amount of the repair work and sustains losses caused by idle time of the machines for technical reasons.

The computations for technical servicing and current repairs must be based upon norms. This implies for all practical purposes that a farm will make payments for the carrying out of all types of work, in accordance with the approved norms for the expenditures of funds. The payment is made in accordance with the agreed upon schedules and proportional to the volume of mechanized work performed by the machines serviced during the accounting period. Moreover, in the event of non-fulfillance of the planned coefficient for readiness of the pool, raysel'khoztekhnika substitutes its own reserve equipment for the faulty machines or it reimburses the farm for the untimely carrying out of agricultural operations (disruptions of the technological process).

The reliable operation of the machines must be encouraged in every possible way, their inter-repair and overall periods of operation must be extended and the material and monetary expenditures for ensuring the operational efficiency and other quality indicators of equipment usage at farms being serviced must be lowered. These indicators must be taken into account when determining the bonus amounts to be paid to Goskomsel'khoztekhnika workers for having increased production at farms which were serviced. A savings in funds compared to the planned norms must serve as a source for financing the material incentive fund for the repair and servicing personnel of raysel'khoztekhnika for having fulfilled their contractual obligations. This same source is used for issuing bonuses to the machine operators of farms for the efficient use and proper preservation of their equipment.

The computations for capital repair work must be carried out in another manner. The effectiveness of such work must be defined as a condition for equal economic

feasibility of use for machines which underwent capital repairs and for identifying their useful effects. It must be equally advantageous for a consumer to use a machine both prior to and following capital repair work.

Based upon this condition, the value of a repaired machine is determined not on the basis of the expenses for the repair work, but rather based upon the machine's suitability compared to a similar type new machine, accepted as the standard. The coefficient of equivalence for a repaired object serves as the indicator for the quality of the repair work, according to the formula

$$C_p = a \eta_k C_H, \quad (1)$$

where C_p is the value of the repaired machine; C_H is the restored value or the cost of reproducing the standard model under modern conditions; a is the coefficient which takes into account the irreversible phenomena of the aging process and a reduction in the suitability of the repaired object, not restored by the repair work (for modern repair work, a can be accepted as equal to 0.8); η_k is the indicator for the quality of the repair work.

The quality of the repair work is determined by comparing the reliability indicators for the repaired and new objects, particularly in connection with the level of restoration of the technical service life:

$$\eta_k = T_p / T_o, \quad (2)$$

where T_p and T_o are the inter-repair and pre-repair service lives of the repaired objects respectively.

The service lives are stipulated in the technical conditions for production and repair and they are confirmed by the data obtained from bench and field testing. Thus importance is attached to ensuring that repaired machines, similar to new ones, undergo check and deterioration testing at state machine testing stations. In this regard, the machine testing stations should ideally be transferred from subordination to Goskomsel'khoztekhnika and placed under the command of the Ministry of Agriculture or the USSR State Committee for Standards. This will undoubtedly promote improvements in the quality of the repair work being carried out.

Formula 1 reveals the true value of a repaired machine (unit or part) compared to a new and standard one. Hence the permissible expenditures for capital repair work, taking into account its quality, equal

$$Z_p = a \eta_k C_H - C_{oct} \quad (3)$$

where C_{oct} is the pre-repair residual value of the object, in rubles.

Approximate computations (when $C_{oct} = 0.3C_H$) reveal that the expenditures of consumers for capital repairs on tractors must not exceed the values cited in Table 1. For the existing level of repair quality ($\eta_k = 0.5...0.6$), the prices for capital repair work are clearly inflated. A substantial improvement in the quality of the repair work (up to $\eta_k = 1$) must be achieved with no additional increase in its wholesale price.

TABLE 3

Maximum Permissible Expenditures for Capital Repair of Tractors, in rubles

Tractors	Wholesale Price for New Machine	Permissible Expenses for Repair Quality Indicator, rubles				Wholesale Price for Capital Repairs	
		0.5	0.6	0.8	1.0	For Agriculture	For Other Departments
K-701	15575	1557.5	2803.5	5295.5	7787.5	5104	5800
K-700A	11975	1197.5	2155.5	4071.5	5987.5	4329.6	4920
T-150K	7152	715.2	1287.4	2431.7	3576.0	2974.0	3380
MTZ-80	3982	398.2	716.8	1353.9	1991.0	897.6	1020
MTZ-50	2714	271.4	488.5	922.8	1357.0	633.6	720
T-40M	2216	221.6	398.9	753.4	1108.0	589.6	670
T-25A	2008	200.8	361.4	682.7	1004.0	563.2	640
DT-75MC4	3264	326.4	587.5	1109.8	1632.0	1284.8	1460

We based the maximum price for the capital repairs not upon the actual expenditures of the repair enterprises, as is presently being done, but rather upon the quality, that is, the use characteristics of the product. Such an approach takes into account the true contribution by the repair enterprise in the creation of the total social product and it does not conflict with the labor theory of value.

The proposed method for determining the results of the production activity of repair enterprises will motivate their collectives into achieving maximum improvements in quality and searching for reserves for lowering the production costs for their product. If in the process the incentive funds will be formed depending upon the difference between the value of the equivalent product and the costs for producing it, then the interests of each enterprise and each worker will coincide with the interests of society.

Computations have shown that specialization and concentration in the carrying out of repair work and raising the equipment level and production organization at the repair enterprises to the production level in machine building will make it possible to convert repair work from unprofitable to profitable operations. Thus, with complete restoration of the operational characteristics to the level of new models, at enterprises having an annual program for 10,000-20,000 tractors and 30,000-60,000 motors, the total expenses for repair work, including pre-repair residual cost and transport expenses, may be 80 percent lower than the cost for new models of the same type.

The cost accounting relationships between agricultural and repair enterprises should ideally be based upon a cost evaluation and an equivalent exchange of the repair fund and the products of repair production operations. For all practical purposes, this can be carried out through the sale and purchase of objects which are subject to repair or have already been repaired, in accordance with economically sound prices. The realization of the proposed mechanism for mutual exchange presupposes an evaluation of the wear and tear and residual value for the two categories of machines and their component parts: assigned for initial capital repairs and which underwent repair work earlier. The output of repair production work is sold to consumers at prices computed according to the above-mentioned method.

The objective opportunities for raising the quality and efficiency of repair production work could have been realized more quickly and more successfully if the work had been organized in the machine building system. A single technical policy for the manufacture repair and modernization of machines and direct interest by the industrial enterprises not only in increasing the production of machines but also in maintaining them in good working condition would have exerted a positive influence. At the same time, this would have promoted improvements in the technical level of the new equipment being produced. Such an important solution for this problem would have met the interests of the entire national economy.

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TILLING AND CROPPING TECHNOLOGY

CALL FOR ALLOTMENT OF BETTER LANDS FOR SOWING OF DURUM WHEAT

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Article by I.V. Gushchin, candidate of agricultural sciences and honored agronomist of the RSFSR at the Krasnokutsk Experimental Agricultural Station: "The Best Lands -- For Durum Wheat" /

Text Since olden times, the principal base for the production of durum wheat has been the southeastern European part of the USSR. Three decades ago its proportion of the overall sowings of spring wheat in Saratov Oblast was 54 percent, in Volgograd Oblast and Orenburg Oblast -- 33 and in Kuybyshev Oblast -- 25 percent. But towards the end of the 1950's, a sharp reduction took place in the sowing areas for this crop.

In order to halt this harmful trend and revive the production of high quality grain, a bonus was introduced 5 years ago for 1st class durum wheat in the amount of 100 percent of the price for soft wheat, 2d class -- 70 percent and for 3d class grain use was made of the bonus established earlier -- 20 percent. The cultivation of durum wheat grain is a national requirement. But each individual farm is guided by the feasibility and profitability of a particular crop.

Durum wheat is more demanding with regard to growth conditions and especially moisture availability. In regions on the left bank of the Volga River it frequently suffers from drought conditions and its yields decrease compared to soft wheat. However, in the process it furnishes good quality grain having a high protein and gluten content, that conforms more often to the requirements for 1st and 2d class than that obtained under damp conditions. This is precisely the grain that commands a payment that is 70-100 percent higher than that for soft wheat and makes the crop under examination economically effective. By way of an example, allow me to cite some materials for Krasnokutskiy Rayon in Saratov Oblast. In 1978, Krasnokutka 6 durum wheat was sown here on an area of 22,900 hectares and an average yield of 21.5 quintals per hectare was obtained, 1.5 quintals more than that for soft wheat. Of the gross yield of 482,600 quintals, 315,000 quintals or 62.9 percent were turned over to the state. High returns were realized by the workers at the Kolkhoz Put' K Kommunizmu (chief agronomist V.A. Skripnikov), where 22.7 quintals per hectare were obtained from an area of 977 hectares. They sold almost one half of the grain delivered to the grain receiving point as 1st class grain, with a 100 percent bonus added on to the price for soft wheat. The Chkalovskiy Sovkhoz, where the chief agronomist is I.A. Levenets, obtained 28.2 quintals from an area of 1,050 hectares. Of the grain sold, 90 percent was 2d class

and thus an additional payment of 70 percent was made. The Zhdanovskiy Sovkhoz, where A.M. Kosachev serves as the chief agronomist, obtained 28.1 quintals per hectare from an area of 3,400 hectares. For the 1st class grain which it delivered, the farm received an additional payment of approximately 344,000 rubles.

Overall, the rayon sold 287,000 quintals of 1st class grain and received 2.75 million rubles in the form of an additional payment for quality and for having exceeded the plan for the delivery of durum wheat grain.

In Saratov Oblast, during the 10th Five-Year Plan, against a plan calling for 700,000 tons the grain receiving points accepted 882,300 tons of durum wheat grain and thus the plan was over-fulfilled. But the graded grain, including the 3d class grain, was only slightly suited for the macaroni industry -- only 299,000 tons or 34 percent of the total amount delivered. And almost all of it came from rayons on the left bank in the southeastern portion of the oblast. The largest amount was supplied by Pugachevskiy Rayon -- 58,000 tons, Dergachevskiy -- 54,000 tons and Krasnokutskiy Rayon -- 37,000 tons. The greatest yield of graded grain was obtained in Krasnokutskiy Rayon 63.6 percent, in Dergachevskiy -- 60.5 and in Pugachevskiy Rayon -- 55.4 percent. Of the right bank rayons, only Samoylovskiy Rayon produced a noticeably amount of graded grain -- 735 tons or 4 percent of the total amount delivered by it.

In accordance with the existing statute, rayons which are tasked with growing durum wheat receive a 10 percent bonus for non-graded grain. In order to avoid an unsound stimulation of the production of non-graded grain, the plans for the right bank farms for the 11th Five-Year Plan should be removed and transferred over to the left bank. Naturally, here they will not be the same. Rayons which adjoin the water areas of the Volga River and which did not obtain graded grain during the 10th Five-Year Plan were not given such a task. However, it is difficult to explain why rayons located under favorable conditions for the cultivation of high quality grain were given plans which differ sharply from one another. Yershovskiy Rayon must produce 7,700 tons, in all 2.7 tons per 1,000 hectares of overall sowing area, Pereiyubskiy Rayon -- 22,800 tons or 10.5 tons and Dergachevskiy Rayon, which is located alongside Yershovskiy Rayon -- 42,500 tons or 14.3 tons per 1,000 hectares of sowing area in the rayon. Or let us take two other rayons: Krasnokutskiy Rayon was assigned the task of producing 12,900 tons and Fedorovskiy Rayon, which has more favorable physical-geographic conditions and smaller dimensions -- 5,600 tons. For 1,000 hectares of sowing area, Krasnokutskiy Rayon must furnish 6.8 tons and Fedorovskiy Rayon -- only 3.9 tons. And indeed in Fedorovskiy Rayon the sovkhozes Spartak, imeni Cherynshevskiy, Krasnyanskiy, Yerusalanskiy and the Kolkhoz imeni Kuybyshev -- an advocate of the celebrated Melyanopus 26 variety -- are praised for their high yields of durum wheat and excellent quality grain, even for rayons on the right bank side of Saratov Oblast.

Irregular distribution can be of substantial importance in connection with payments for products obtained. For example, it is easier for Yershovskiy Rayon to over-fulfill its task and receive an additional 50 percent bonus than it is for Dergachevskiy Rayon.

A complex of agrotechnical factors is essential for the formation of an abundant yield of durum wheat grain having a high degree of glassiness and the required protein and gluten content: predecessor crop arrangements, cultivation system,

fertilizers, campaign against pests and weeds and organization of the harvest. The Krasnokutsk Experimental Station conducted a study of various predecessor crop arrangements for durum wheat. The best turned out to be those which left the fields free of weeds and rich in nutrients -- this included fallow fields, fodder grasses harvested early (for feed or silage), winter crops following well tilled clean fallow, corn for silage.

But with a sharp expansion in the grain crop sowings and the removal of forage crops from the field crop rotation plans, the selection of predecessor crops was narrowed sharply. A six-field crop rotation plan is typical of the central right bank area, with fallow and winter wheat for one field and four fields occupied by spring grain crops (spring wheat, millet, barley). Millet is not the best predecessor crop. Quite often the sowings of wheat are severely obstructed by its windfalls, a campaign against which is practically futile. Thus it is natural to sow durum wheat following winter crops which in turn followed fallow.

In many aspects the system of agrotechnical measures for durum wheat does not differ substantially from other grain crops; it should be remembered that durum wheat responds more sharply to a deficit of moisture and thus the accumulation of water on the fields on which it is sown is a vital task. When planted following winter crops, which leave a higher stubble, more extensive use should be made of non-mouldboard plowing and the stubble should be retained and used for the purpose of snow accumulation.

In connection with greater intensification of the culture of farming, the problems concerned with raising soil fertility have become more urgent in nature. Fertilizers are adequately effective in our extremely arid regions. According to data supplied by the Krasnokutsk Experimental Station, the following results were obtained on the average over a period of 5 years (1976-1980). For a controlled yield of 13.0 quintals per hectare, an application of 20 kg of phosphorus per hectare produced an increase of 0.6 quintals. The use of 1 quintal of composite nitroammophos fertilizer per hectare produced an increase of 1.1 quintals. But the best variant was the one in which 40 kg of phosphorus and 30 kg of nitrogen were applied at the time of the principal plowing -- the increase amounted to 1.3 quintals. During years marked by favorable weather conditions, the effectiveness of fertilizers is considerably higher. In 1978, for a controlled yield of 30.4 quintals per hectare and an application of 1 quintal of nitroammophos (in the spring) -- 35.7 quintals, the increase amounted to 5.3 quintals per hectare.

At the same time, fertilizers, especially nitrogen fertilizers, affect the quality of the grain. Thus, in 1974, under controlled conditions the gluten content was 26.5 percent and against a background of N₃₀P₄₀ -- 28.2 percent and the grain in terms of gluten content was improved from 2d to 1st class.

Based upon the above, it follows that the use of chemical processes must be increased when durum wheat production is concentrated in regions on the right bank of the Volga. Each hectare of durum wheat should be supplied with no less than 30 kg of nitrogen and 40-60 kg of phosphorus.

When selecting a tract and a soil cultivation system, special attention is given to combating weeds. The cultivation should be carried out to the seed placement depth and the sowing -- taking into account the spring conditions during the

earliest period. Many years of study have shown that high durum wheat yields can be obtained when the sowing is carried out at the rate of from 2.5 to 3.0 million germinative seed per hectare. An increase in the sowing norm does not produce the desired results. During an experiment carried out in 1981 using the Krasnokutka 6 variety, an increase in the sowing norm did not increase the yield but the quantity of seed doubled. If we consider the seed in terms of the price for just the second reproduction, then one resown quintal costs 36 rubles and this amounts to a loss for each hectare, caused by the use of an incorrect sowing norm.

In order to maintain high varietal purity in the crop under discussion, shorter periods for strain renewal were established -- once every 3 years. Unfortunately, the seed production system (elite seed farms, rayon seed farms) is not sufficiently efficient, as a result of which annual planned strain renovation is not observed.

Grain quality is influenced to a substantial degree by the harvesting periods and methods and by the processing work carried out on the threshing floors. If allowed to become overripe or if beset by other unfavorable harvesting and drying conditions, the color of the grain changes, it loses its lustre and its glassiness decreases. The harvesting work should commence as early as possible and it should be carried out rapidly using the two stage method during the waxy ripeness phase when the moisture content of the grain is 35-40 percent. The picking up of mown grain commences immediately after the windrows have dried out. Even minor delays result in crop losses and even a small amount of rainfall can bring about a deterioration in the quality of the grain. Alternately recurring damp and dry conditions can be especially harmful.

When harvesting durum wheat, the operation of the drum should be adjusted so as to ensure complete threshing but no crushing of the grain, an action which often occurs during dry hot weather. A large percentage of damaged grain lowers the marketable yield, makes it difficult to improve it to the required condition in terms of grain impurities and exerts an adverse effect on the seed qualities. The fracturing of the seed bud and small cracks in the grain lower its germinative capability. Thus other requirements are established in the seed standard for durum wheat, compared to soft wheat. Thus the germinative capability for 1st class durum wheat grain is 70 percent and soft wheat -- 87 percent, for 2d class durum wheat -- 87 percent and soft wheat -- 92 percent, for 3d class durum wheat -- 85 percent and for soft wheat -- 90 percent and these conditions must be observed very strictly at seed production farms.

A primary condition for obtaining high quality durum wheat grain is that of sowing a good variety. Such varieties as Bezenchukskaya 139, Orenburgskaya 2, Saratovskaya 40, Saratovskaya 41 and Krasnokutka 6 have been regionalized for the southeastern zone. The latter variety -- for the most arid portion of the right bank area of the Volga -- Volgograd and Saratov Oblasts. Its special feature, as noted in the materials of the state committee, is a higher gluten content in the grain compared to the other varieties.

In order to create a stable base for the cultivation of durum wheat grain, strict and sound plans must be established and their execution controlled. The experience accumulated in the production of groat crops -- buckwheat and millet -- reveals that in addition to increasing the monetary payments for the products another type

of farm stimulation is also useful -- the additional sale of concentrates proportional to the products procured. The mentioned incentive should ideally be disseminated to farms engaged in producing high quality durum wheat grain.

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1. CULTIVATION TECHNOLOGY

2. DURUM CROP DEVELOPMENT IN NORTHERN KAZAKHSTAN, OISZKIN

Na-Aca SEL'SKOYE KHOZYAYSTVO KAZAKHSTANA in Russian No 11, Nov 82 pp 107-110

By V. Savitskaya, candidate of agricultural sciences and A. Voskresenskiy, agronomist at the Put' K Kommunizmu Kolkhoz, Kustanay oblast: "A Variety of Durum Wheat"

Durum wheat is an intensive type of crop and one which requires special cultivation conditions. Compared to soft wheat it is less drought resistant and its yield decreases sharply when an incorrect cultivation technology is employed in unfavorable years. In such cases, unstable sowing areas and unstable yield reduction are observed for this crop. Considerable improvements have been realized in recent years in the system of strain testing and regionalization. Regionalization is being carried out by zones, taking into account the biological properties of durum wheat and its technological status under definite soil-climatic conditions. From 1976 to 1982, in the zones of northern Kazakhstan and western Siberia, four varieties of durum wheat were regionalized -- Nakat, Almaz, Altayka and Bezenchuk. This is promoting a rebirth for the durum wheat crop and particularly in the steppe and forest-steppe regions.

Years mentioning that a sharp seed deficit is being experienced in the country, the introductions of new regionalized varieties. The existing system of seed selection, by means of linear selection and checks carried out on lines of different genotypes, ensures a long life for the regionalized varieties, but it has not been provided with regard to the rapid introduction of the best new varieties. This is a major shortcoming.

The main obstacle which prevents the power for durum wheat varieties is the low yield that is typical of wheats. On the best farms and from production sowings, a maximum yield of 1.5-1.6 t/ha is achieved in the steppe and forest-steppe regions -- up to 35-40% less than for soft wheat. However, the cultivation of various varieties of durum wheat must take into account the biological peculiarities of the crop, that is, its greater sensitivity to climate. In this regard, durum wheat is considerably more sensitive to the crop under production conditions than soft wheat in almost all climatic regions, including in the eastern regions and this fact tends to limit the application of the crop.

At present, the work of a farm is evaluated as a rule based upon the yield of the main crop, and in this instance the wheat grain on the whole, without

taking into account the economic effectiveness of individual varieties. This is particularly true in view of the fact that purposeful work aimed at cultivating and selling high quality grain is not being carried out in all areas. The following measures can stimulate the production and procurements of high quality grain:

- a) further breeding and regionalization of new and more valuable varieties;
- b) improving the cultivation technology for grain and its singleness of purpose;
- c) the development and implementation of a system of material incentives for workers for the production and sale of high quality grain to the state; improving the system for procuring wheat grain and for defining more precisely the quality indicators and the methods for determining them. It has also been established that the economic effectiveness of a variety is dependent upon its cropping power and the technological qualities of the grain.

These two factors are influenced by weather conditions. Nevertheless, the advantages to be realized from cultivating durum wheat as opposed to soft wheat, even when its cropping power is considerably less, have been proven. In addition, high quality varieties of durum wheat possess greater nutritional value, since its grain has a higher protein content. The gross grain yield per hectare for durum varieties is at the same level or higher than that for soft wheats.

SibNIISKHOZ /Siberian Scientific Research Institute of Agriculture/ in 14 oblasts of western Siberia and northern Kazakhstan has organized base farms on a contractual basis for the testing and propagation of new varieties of grain crops: soft and durum spring wheat, barley, oats, millet, peas. One such farm is the Put' K Kommunizmu Kolkhoz in Fedorovskiy Rayon in Kustanay Oblast, which is located in a sub-zone of the moderately-dry steppe region and has an average annual precipitation of 307 millimeters.

Studies have been underway since 1978, on an experimental field of the base farm, on 14 varieties of spring soft and durum wheat, 5-6 varieties of barley and 4-6 varieties of oats. The best results of these tests are being propagated and recommended for regionalization. Thus the State Committee for Strain Testing, taking into account the desires of the base farms, regionalized the Donetskii 8 barley variety and the Omskaya-9 and Almaz spring wheat varieties in Kustanay Oblast.

The Put' K Kommunizmu Kolkhoz was the first in the oblast to carry out strain changing in durum wheat over a period of 2 years -- replacing the Khar'kovskaya 46 variety with Almaz, which under dry climate conditions annually furnishes grain and seed which meet the standards for 1st class.

During sales to the state, the price for a quintal of Almaz seed at the kolkhoz reached 40.02 rubles.

The farm realized its greatest profit from the sale of Almaz grain and seed in 1980, a favorable year from the standpoint of weather conditions; the profit amounted to 30 percent of all profit obtained from field crop husbandry operations.

During the initial years of their cultivation, newly regionalized varieties are as a rule planted following the best predecessor crop arrangements -- fallow, corn. Thereafter, as the sowing areas for the crop are expanded, it is sown twice or more on the same field. However, in the process the productivity of the durum wheat decreases sharply. It is less productive when sown in areas where there is a deficit of moisture.

Thus they have begun restoring the durum wheat sowing areas in the north Caucasus regions. And a chief item on the agenda at the present time is that of ensuring rational use of the land being employed for this crop. This will require an increase in the use of the best predecessor crop arrangements and particularly clean fallow and also improved mineral-technical conditions.

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TILLING AND CROPPING TECHNOLOGY

CROP ROTATION PLANS FOR SOIL CONSERVATION TILLAGE

Alma-Ata SEL'SKOYE KHOZYAYSTVO KAZAKHSTANA in Russian No 10, Oct 82 pp 14-15

Article by N. Shramko, candidate of agricultural sciences and head of the Crop Rotation Laboratory at the All-Union Scientific Research Institute of Grain Farming, Tselinograd Oblast: "Crop Rotation Plans of Soil Conservation Tillage" /

Text The soil conservation system of farming developed by scientists of the All-Union Scientific Research Institute of Grain Farming, jointly with other scientific institutes of the north Caucasus, reliably protects the soil against wind erosion, it lowers the adverse consequences of periodically recurring droughts and it makes it possible to raise substantially the agricultural crop yields. One element of this system of farming is the development and mastering of correct crop rotation plans.

The agrotechnical basis for crop rotation plans is a study of the predecessor crop arrangements, which differ substantially in terms of their influence upon the elements of soil fertility and upon the yields of spring wheat. Based upon studies carried out over a period of many years in the Crop Rotation Laboratory of VNIIKh [All-Union Scientific Research Institute of Grain Farming], it was established that the best predecessor arrangement under local conditions was strip fallow. On a fallow field, with a correct technology being employed for tilling the soil, almost complete destruction of all weeds is ensured and a large quantity of productive moisture and the required nutrients are accumulated. Moisture accumulated during a fallow period is a decisive factor with regard to obtaining high and stable yields of spring wheat. During the course of sowing wheat following clean fallow over the past 14 years (1968-1981), on southern chernozem soils and in connection with tests for the study of crop rotation plans, an average of 18.5 quintals of grain per hectare was obtained. During these same years, the yield obtained from wheat sown following a peas-oats mixture was 16.5 quintals per hectare. Spring wheat sown following corn is inferior in terms of cropping power by 4 quintals per hectare than wheat sown following clean fallow. Repeated sowings of wheat following fallow and row crop predecessor arrangements also differ substantially in terms of cropping power. For example, when wheat is sown as the second crop following fallow, an average of 15.8 quintals per hectare is obtained and the cropping power of wheat following corn was 14.3 quintals, or 1.5 quintals per hectare less. The effectiveness of clean fallow is noted subsequently during the third field of a crop rotation plan. Thus, barley sown as the third crop following fallow in a 4-field grain-fallow crop rotation plan produced 19 quintals per hectare and in the same

crop rotation plan but where the principal predecessor crop was corn, only 16.8 quintals of barley per hectare were obtained. Compared to a 4-field grain fallow crop rotation plan, the annual shortfall in grain from a 4-field grain-row crop rotation plan amounted to an average of 7.7 quintals per hectare.

Spring wheat yields are influenced not only by the predecessor arrangements but also by their combination in a crop rotation plan. In the case of wheat grown for 2 years following clean fallow (3-field grain fallow crop rotation plan), the grain yield per hectare of arable land equalled 9.1 quintals. Raising the proportion of fallow to 25 and the wheat areas to 75 percent, with an alternation of crops (clean fallow -- wheat -- wheat -- wheat) promotes an increase in the grain yield to 12.1 quintals per hectare. If instead of wheat being sown as the third crop following fallow, barley is planted on the field in this same 4-field grain-fallow crop rotation plan, then the productivity of a hectare of arable land is raised to 13.7 quintals. The cropping power of a hectare of arable land in a 5-field grain-fallow crop rotation plan remains at this same level. These crop rotation plans are the most acceptable for the conditions found in Tselinograd Oblast.

In crop rotation plans which lack clean fallow (grain-row crop plans), the productivity of a hectare of arable land in terms of wheat yield is lower than the recommended figure by 4.8 quintals and in terms of overall grain yield (taking into account the grain forage fields) -- by 2.2 quintals. Their overall productivity is at the level of continuous cultivation of wheat following wheat for an extended period of time.

Over the past few years, with improvements taking place in the culture of farming and with changes occurring in the order of crop alternation in some crop rotation plans, their productivity has changed noticeably. For example, the cropping power for wheat in a 6-field grain-fallow crop rotation plan (with alternation of the crops: clean fallow -- wheat -- wheat -- wheat -- wheat) increased by 0.9 quintals per hectare. It is believed that the most promising plan for all of northern Kazakhstan and for Tselinograd Oblast is a 6-field crop rotation plan with the following alternation of crops: clean fallow -- spring wheat -- spring wheat -- oats -- spring wheat -- barley. The structure of the sowing areas in such a crop rotation plan will be as follows: clean fallow -- 16.6, spring grain crops -- 83.4 percent. Under the extremely dry conditions experienced during 1981, the productivity of such a crop rotation plan amounted to 13.3 quintals per hectare, or 0.6-0.8 quintals higher than that obtained from 4-5-field grain-fallow crop rotation plans.

All of these crop rotation plans developed by the institute underwent production testing at our experimental farm. The productivity for an area of 25,000 hectares was as follows: prior to mastering the grain crop rotation plans 10.9 quintals were obtained per hectare, during the period of mastering the plans -- 13.2-16.4 and during the 10th Five-Year Plan -- 18.6 quintals of grain per hectare.

Production tests were carried out at 10 farms in various zones of Tselinograd Oblast in 1976 and 1977 for the purpose of determining the effectiveness of grain-fallow crop rotation plans. Five-field crop rotation plans with an alternation of crops: clean fallow -- wheat -- wheat -- wheat -- barley, were studied at the Pervomayskiy, Shuyskiy, Priozernyy, Novoaleksandrovskiy, Kapitonovskiy, Zhuravlevskiy and Andreyevskiy Sovkhozes. A 4-field crop rotation plan with an alternation of crops:

fallow -- wheat -- wheat -- wheat, was studied at the Krasnoznamenskiy, Put' Lenina and Krasnoyarskiy Sovkhozes. The results of the production check carried out on field crop rotation plans revealed that the grain crop yields from the experimental crop rotation plans were higher on the average for the oblast by 1.5 quintals per hectare. The increase in yield at the Krasnoyarskiy Sovkhoz from such crop rotation plans amounted to 3.9, the Shuyskiy Sovkhoz -- 1.7 and at the Zhuravlevskiy Sovkhoz -- 2.5 quintals per hectare. This serves as convincing proof of the need for mastering in the near future the crop rotation plans tested on these farms for use on the entire sowing area.

If we compare the average grain crop yield obtained from the experimental crop rotation plans against that for farms in the oblast having similar indicators, then it would be quite correct to state that reserves are available for increasing the production of grain and that they are still not being utilized adequately.

With regard to those farms in Tselinograd Oblast which are located on southern calcareous and common chernozem soils and have annual precipitations in excess of 300 mm, the most acceptable plan is a 5-field grain-fallow crop rotation plan: strip fallow -- wheat -- wheat -- wheat -- barley; or strip fallow -- wheat -- wheat -- wheat -- wheat. In the case of such crop rotation plans, the clean fallow will occupy 20 percent of the area and grain crops -- 80 percent. Moreover, on farms in Balkashinskiy Rayon, a preference should be shown for field crop rotation plans having a heavy saturation of barley.

On shallow chernozem and dark chestnut soils having an annual precipitation of approximately 300 mm, the most acceptable plans will be 4-field grain-fallow crop rotation plans: strip fallow -- wheat -- wheat -- wheat; strip fallow -- wheat -- wheat -- barley. The clean fallow in such crop rotation plans will occupy 25 percent and the grain crops -- 75 percent.

On soils having a light mechanical composition (Seletinskiy Rayon and the eastern portion of Yermentauskiy Rayon), use should ideally be made of soil conservation crop rotation plans containing perennial grasses grown in strips, grain crop sowings and fallow. In such crop rotation plans the perennial grasses will occupy 50 percent of the arable land, clean fallow -- 10 and grain crops -- 40 percent.

The introduction of a complex of the recommended crop rotation plans, coupled with correct use of the anti-erosion implements and machines, will make it possible for the agricultural service of farms to control their yields in a purposeful manner and to realize the greatest return per hectare of arable land. The successful carrying out by the virgin land workers of the decisions handed down during the 26th party congress and the May (1982) Plenum of the CPSU Central Committee will be greatly dependent upon the above.

From the editorial board: It is apparent from the article by N. Shramko that scientifically sound crop rotation plans constitute an important part of the soil conservation system of farming. Greater attention must be given to them and the role played by clean fallow raised.

Experience has shown that clean fallow makes it possible to combat drought conditions more effectively, it aids in achieving stability in grain production by years and it promotes improvements in the quality of the grain. Meanwhile, proper attention is

not being given to clean fallow in all areas. In some areas the clean fallow is even being decreased in size or it is not being properly tended. For example, during the 9th Five-Year Plan the clean fallow in Kustanay and North Kazakhstan Oblasts was almost eliminated. The result? The cropping power of the grain crops decreased, as did also the gross yields of grain.

The editorial board believes that the workers attached to the agricultural service of farms, rayons and oblasts and also the workers at scientific institutes should share their experience in introducing a scientifically sound system of farming into operations, a system which should fully take into account the natural-economic conditions not only of each zone and oblast but also each rayon and farm. All agricultural workers and the republic's agricultural scientists are required to do this by the decisions handed down during the May Plenum of the CPSU Central Committee.

We await your letters, articles and responses.

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TILLING AND CROPPING TECHNOLOGY

INSUFFICIENT EQUIPMENT FOR SOIL CONSERVATION TILLAGE

Types of Anti-Erosion Equipment Required

Alma-Ata SEL'SKOYE KHOZYAYSTVO KAZAKHSTANA in Russian No 12, Dec 81 pp 36-37

Article by F. Popov, worker for PRIURAL'YE Newspaper, Ural Oblast: "Shortage of Sweeps"/

Text Wherever one looks -- there is the boundless steppe, the grasses burned by the sun and the scorched earth which has never seen a plow. Such was the sight witnessed by the first virgin land settlers in Burlinskiy Rayon on the eve of the mass development work in 1954.

Today this rayon is the largest producer of grain not only in Ural Oblast but for the republic as well. During the years of the virgin land development, the grain crop sowing areas increased from several thousands of hectares to one quarter of a million hectares.

The field crop growers achieved a considerable increase in their gross yields of grain mainly as a result of having developed the new lands. But time passes and the situation changes. The reserves available to the rayon's farmers for expanding the sowing areas have continued to decrease. And this raises the need for increasing the cropping power of the fields through the introduction of progressive and scientifically sound technologies and agrotechnical methods, for improving the use of mineral and organic fertilizers and so forth. In short, full use should be made of everything that, taken together, constitutes the culture of farming.

A definite amount of work has been carried out aimed at improving this culture. The sovkhozes Pugachevskiy, Akbulakskiy and Berezovskiy and the kolkhozes imeni Lenin, imeni Tel'man and Ural have earned the right to be referred to as farms of a high culture of farming. Nevertheless, many unused reserves still remain. This is borne out by the great differences in cropping power. For example, let us take the Ural and Pobeda Kolkhozes, which operate under completely identical soil-climatic conditions. The former is annually obtaining an average of 14 quintals of grain per hectare and the latter -- 1 quintal less. In terms of vegetable cropping power -- the difference is 219 quintals. The farmers of the high culture of farming farm -- the Ural Kolkhoz -- are surpassing to a considerable degree their neighbors in the production and procurements of grain.

A low yield per hectare -- from 10.6 to 11.3 quintals -- is being obtained by the Mirgorodskiy Sovkhoz and the Khleborob and Zavety Il'icha Kolkhozes. Beyond any doubt, the workers in Burlinskiy Rayon have fine opportunities at their disposal for performing better work. However, a number of factors are preventing them from doing so.

The conversion over to the progressive soil-protective system of farming was begun in 1975. Towards this end, special measures were developed and approved for each farm. The implementation of these measures was expected to have been completed by 1978. However, many of them still remain on paper at the present time. The field crop growers can only dream of converting over completely to the soil-protective system of farming.

Compared to the initial years devoted to developing the new agricultural practices, when the work appeared to be proceeding successfully -- the areas tilled by sweeps and sown using anti-erosion sowing machines were increased considerably -- at the present time the work has appeared to stall down. Sweep cultivation of the soil is being carried out on 130,000 hectares at a time when the overall grain crop sowing area is 240,000 hectares. Considerable tracts are being cultivated using mouldboard implements, the sowing is being carried out using conventional sowing machines and the tracts are subject to wind erosion. In the case of these 110,000 hectares, if we take into account the increase in cropping power of 2.5-3 quintals per hectare as a result of autumn sweep cultivation of the soil, a shortfall of 275,000-300,000 quintals of grain is sustained.

On such farms in the rayon as the Aksu and Mirgorodskiy Sovkhozes and the Zavety Il'icha and Krasnyy Mayak Kolkhozes, only one half of the area set aside for grain crops is being tilled using non-mouldboard implements.

The fact of the matter is that an acute shortage of KP-2-250 sweeps, KPP-2.2 cultivator-sweeps, KPG-250 deep rippers and KPG-2-150 implements is being felt and the shortage is not limited to these implements alone. In accordance with the computations for a complete conversion over to the soil-protective system of farming, the workers in Burlinskiy Rayon require 3,290 BIG-3 harrows, 2,630 Szs-2.1 sowing machines and 500 KPE-3.8 cultivators. Actually, the number of harrows available is 4 times less than the required number, sowing machines -- 3 times less and cultivators -- 2 times less.

Anti-erosion equipment is being supplied to the farms slowly and in an unbalanced manner according to types and models. As a result, the use of this equipment as a single complex of the soil-protective system of farming is being complicated.

In behalf of this year's crops, for example, approximately 130,000 hectares were plowed in the autumn using non-mouldboard implements and only 114,000 hectares were sown using stubble sowing machines. Moisture retention work was carried out using BIG-3 harrows on an even smaller area -- 100,000 hectares. Thus, owing to a disruption in the complex of agrotechnical measures on 30,000 hectares, the soil-protective system of farming did not produce the desired effect, since on the soil which was tilled in the early spring using sweeps it was necessary to employ spiketooth and disk harrows, which result in a rapid evaporation of moisture.

Is there a solution available for the situation that has developed? This is a complicated question. Unfortunately, industry is still not satisfying the

requirements of agriculture and particularly those of Ural Oblast for anti-erosion equipment, either from the standpoint of quantity or quality. The same sweeps which are available in Burlinskiy Rayon are not suitable for the local soils -- mainly of a heavy mechanical composition. The lugs fall off and the plowshare fastening bolts come loose. In turn, stronger material is required in order to turn the bolts.

The farm leaders and specialists, especially the engineering-technical workers, must not wait until the agricultural machineplants commence producing more reliable implements for the non-mouldboard tilling of soil. Instead, they should compensate for the shortage of sweeps, as dictated by the experience of leading and virgin land farms throughout the republic, by employing plows with the mouldboards removed or with so-called Mal'tsev bars.

Certainly, it will be difficult to solve the problem of anti-erosion equipment using such measures: a conventional sowing machine or harrow cannot be made into a stubble sowing machine or needle-shaped harrow. This point of view is shared at the oblast agricultural administration. The problem on the whole continues. The requests for acquiring a complex of machines for the soil-protective system of farming are not being satisfied fully. And that equipment which is being delivered is being distributed among the rayons in a very strict manner. And it is being repeated in this manner each year. Is any thought being given to just how long this process of mastering the soil-protective system of farming will last?

Here is a simple example drawn from the experience of Burlinskiy Rayon, which commenced mastering the system in 1975. At the time there were 402 BIG-3 harrows and 384 Szs-2.1 sowing machines on the farms. In 1979 there were 808 harrows and 915 sowing machines. That is, 101 harrows and 122 sowing machines had been supplied annually on the average. If these same rates are continued for these machines in the future, then the requirements of farms in the rayon for them (3,290 and 2,630) will not be met until a number of years have elapsed. This will hinder to a considerable degree the conversion over to the soil-protective system of farming.

A question of a different nature arises. Should sweeps, sowing machines and harrows be made for all of the grain regions, thus ensuring the immediate conversion of farming over to the progressive technology? Or would it be better to develop this technology by stages? Let us assume that a complex of machines is made available to Burlinskiy Rayon, subsequently to Chingirlauskiy and Priural'nyy Rayons and so forth. Experience will be developed in the process. This experience can be employed successfully by those rayons which at a later date convert over to the new technology.

It is obvious that the oblast's agricultural administration must apply itself in a more scrupulous manner not to the distribution of the anti-erosion agricultural machines by rayons, but rather to the more rapid, complete and consistent mastering of the soil-protective system of farming. This must be done in order to increase further the gross yields of grain based upon improvements in the culture of farming. This represents a vast field for future activity.

Follow-Up Commentary

Alma-Ata SEL'SKOYE KHOZYAYSTVO KAZAKHSTANA in Russian No 7, Jul 82 p 46

/Article: "Shortage of Sweeps"/

Text An article sent in from Ural Oblast was published in Issue No 12 of the journal for last year under the title "Shortage of Sweeps." In it the author discussed the shortcomings associated with the introduction of the soil-protective system of farming into operations on grain farms. In particular, it was noted that the kolkhozes and sovkhozes are experiencing an acute shortage of anti-erosion equipment.

The chief of the Ural Oblast Agricultural Administration, A. Knysh, has reported that the facts cited in the article actually took place. "The introduction of the soil-protective system of farming has still not been completed, despite the fact that in 1981 75 percent of the areas occupied by grain crops were cultivated using the new technology" he wrote in to the editorial board, "but there is not enough equipment for a complete conversion over to the new system. Thus, in order to sow the spring crops during the best periods on the entire area -- and it amounts to 1.5 million hectares -- no less than 15,000 stubble sowing machines are required. But only 12,600 are available. A similar situation prevails in the case of BIG-3 harrows; there is still a shortage of approximately 2,000. True, the requests for these implements for 1982 were satisfied completely, however the number of sweeps being allocated is inadequate. Thus, only 740 KPG-2-150 deep rippers will be supplied although 985 were requested. The number of KPG-250 sweeps being made available is even less (two times less than the number we required)."

We are doing everything possible to correct the situation. The specialists attached to the oblast agricultural administration are devoting constant attention to the problems concerned with the rational and effective utilization of anti-erosion equipment.

From the editorial board. Such was the response received from the chief of the oblast's agricultural administration. However, the mentioned article was not just a means for recording facts. In it the author discussed the more rational use of anti-erosion machines. In particular, it was proposed first of all that they be supplied to those farms which have already accumulated considerable experience in the operation of the new system and which from year to year are raising the cropping power of their crops and yet are forced to cultivate a portion of their fields using primitive methods. Here new capital investments would produce a more rapid return. And such experience in complete deliveries of machines is available in the republic. However, there appears to be no haste in utilizing this experience in Ural Oblast.

The specialists attached to the oblast's agricultural administration must devote more serious attention to this problem.

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